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IMPORTANT!

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OCTOBER 17-20, 1917

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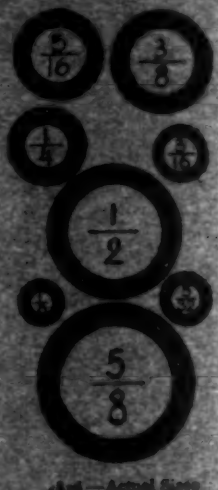

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Vol. VII SEPTEMBER, 1917 No. 9

THE ILLEGAL PRACTITIONER, FAKERS AND CHARLATANS.

GERMAN A. JORDAN, M. D.,
St. Louis, Mo.

Read before the Public Health Administration Section, American Public Health Association, Cincinnati, Ohio, October 26, 1916.

THIS paper is intended to call attention to conditions found in the city of St. Louis relating to fraud and imposition on the sick and afflicted, by persons practicing medicine without being qualified to do so.

In the city of St. Louis prior to 1907, little if any thought was given this subject, although we had had some few complaints of deception and fraud. I do not now recall just what specific instance attracted our attention to the necessity of a full investigation of conditions, but whatever it was, the matter was more thoroughly looked into and sufficient facts were elicited to convince us the subject was worthy of careful survey.

We were far from realizing at the beginning what a really important matter this clandestine practice of the treatment of the afflicted was to be, and were astonished to find how great a number of fakers were fleecing the unfortunate, of not only their money, but their chances of regaining health while such a possibility yet remained.

The state of Missouri has, in my opinion, an ideal law for the regulation of the practice of medicine and surgery.

Without attempting to quote the law in full, the following Section is given verbatim, as it is the Section under which we operate:

"SECTION 5. Any person practicing medicine or surgery in this state, and any person attempting to treat the sick or others afflicted with bodily or mental infirmities, and any person representing or advertising himself by any means or through any medium whatsoever, or in any manner whatsoever, so as to indicate that he is authorized to or does practice medicine or surgery in this state, or that he is authorized to do or does treat the sick or others afflicted with bodily or mental infirmities, without a license from the State Board of Health, as provided in this act, or after revocation of such license by the State Board of Health, as provided in this act, shall be deemed guilty of a misdemeanor, and punished by a fine of not less than fifty dollars

nor more than five hundred dollars, or by imprisonment in the county jail for a period of not less than thirty days nor more than one year, or by both such fine and imprisonment for each and every offense; and treating each patient shall be regarded as a separate offense. Any person filing or attempting to file as his own a license of another, or a forged affidavit of identification, shall be guilty of a felony, and, upon conviction thereof, shall be subject to such fine and imprisonment as are made and provided by statutes of this state for the crime of forgery in the second degree."

This law was upheld by the Supreme Court of Missouri in a decision by Judge Franklin Ferriss in the October Term of 1910, Justices Kennish and Brown concurring.

Judge Ferriss held that the legislature has the power, under the Constitution, to pass all necessary laws to guard the morals, safety and health of the people, even if such laws in some degree operate as a restraint upon recognized constitutional rights. An absolute right to liberty or property, or even life itself, does not exist. The state may and does deprive its citizens of either of these so-called constitutional rights. Our jails and penitentiaries are filled with people who have been deprived of their liberty for the public good, and that the power of the state to deprive these citizens of their rights for the public good has never been questioned.

A sub-division of the department was created to take over this work consisting of a sanitary officer, who qualified as a private watchman empowering him to make arrests, and a police officer in plain clothes, detailed from the police department. A yearly appropriation of $500 was secured for the incidental expenses of this subdivision; this money being used to pay investigators, who were paid at the rate of $2 per day when working, the payment of fees, carfare and other small expenses found necessary.

The first step in the work was an examination of the city directory and telephone directories, and the careful listing of every person classified as a physician or midwife, as the law requires that all such persons must be registered with the department of health. This list was compared with our register and the names of all persons properly registered were checked off. All of the remaining persons received a letter from the department, stating that they were holding themselves out as being entitled to treat the sick and afflicted, and that no record was on file with the department that they were authorized to do so. They were notified to come in at once and show that they were entitled to practice or to immediately discontinue doing so. It is my recollection that not one of those persons was able to show a right to practice, in spite of the fact that the list was a long one.

This cleared the field of all except those who were willing to take their chances in the further practice of their illegitimate calling.

After the lapse of a little time for the scare to blow over, the department began the real active work of the prosecution of those violating the law.

We found the following conditions were to be met:

First, the established advertising medical company, a permanent institution, generally located in palatial offices in some prominent office building. Most of these companies were financed by laymen, who hired a registered physician, or physicians, who received, examined and outlined the treatment of the patients. They were incorporated under the laws of the state of Missouri and conducted their business in such a manner as to make them immune from ordinary attack. A patient applying was first seen by a physician known as a "case-taker," who make all diagnoses, outlined the treatment and fixed the price. Ordinarily this physician did not see the patient again; the subsequent treatments being generally administered by another, who might or might not be a physician; but even if such subsequent treatments were administered by an unlicensed person there was adequate defense in the claim that the treatment was being administered under direct supervision of the "case-taker," who was always a registered man. The conduct of such a place was undoubtedly based upon competent legal advice.

The objection to such a company was that the main and only object seemed to be relieving the patient of any money that he was able to procure. False diagnoses were made and charges were based upon the wonderful qualifications of the specialist, who as a rule was so incompetent as not to be able to make a living in the practice of his profession in a legitimate way.

A notable instance of this character was the Chamlee Cancer Cure Company, who operated for several years under the name of Dr. and Mrs. S. R. Chamlee. They advertised extensively, claiming to cure cancer without the knife or pain by means of an application made from a South Sea island plant, a discovery of Doctor Chamlee's. The advertisement stated that any lump in a woman's breast was cancer, or that any sore of longer than six months' duration anywhere was cancer. These advertisements immediately flooded this company with inquiries from prospective patients. This concern had a regular system of correspondence for such cases, each person being sent identical letters, which were known as "scare letters" and were numbered 1, 2, 3, etc. The first letter informed the applicant that the case was undoubtedly cancer and urged a personal visit. If this letter failed to bring in the patient a second letter was mailed stronger than the first and these were followed by others, each stronger than the other, until the patient either came in response to them, or it was evident that a personal visit could not be expected, in which event a letter was mailed suggesting home treatment, which while not as satisfactory as personal treatment would undoubtedly cure the cancer. The advertisement guaranteed a cure, but nothing was further from Doctor Chamlee's mind than the giving of such a guarantee. This was evaded in the following manner: Upon examination of the patient the first diagnosis was the financial standing, and was the only necessary one, inasmuch as all

cases were pronounced cancerous. A price was fixed a good deal in excess of what the patient was supposed to be able to pay, and upon her statement that she was unable to pay such a fee the amount was reduced, but, of course, with such a reduction he would not be able to furnish a guarantee, assuring the patient, however, that she could depend upon a cure. These fees even when reduced were often as much as $1,000. Should the patient have been underestimated financially, and should she agree to pay the amount first named, an additional examination always revealed other complicating conditions which were made the basis for very much enlarging the fee.

The price having been agreed upon and the money paid (and this was an unfailing rule of the institution that the money was to be paid in advance), the patient was taken alone into a room placed on a chair, anaesthetized, and the lump cut out with a knife, and this without any pretention of asepsis. After the removal of the tissue the site of removal was seared by an application, and a poultice and bandage applied. After this the patient was never allowed to see the site of operation, when the wound was being dressed, and eventually was discharged, at which time she was presented with the excised tissue in alcohol, which was her cancer. Some of these tissues removed were cancerous and some were not. In the first event the cancer recurred, and if Chamlee could not obtain by some excuse an additional fee, the patient was left to her own devices.

The fight against this company was long and full of obstacles, as Chamlee was well able to pay for the best legal talent and to take every advantage allowed by the law. He was attacked from every angle, and being a registered man, his license was revoked, and the licenses of the physicians connected with his institution were also revoked. In this case it was necessary for us to send to California to take depositions, and we never succeeded in making a great deal of progress until we secured the coöperation of one of the physicians who had been associated with Chamlee and who gave us in detail his method. The company was finally disposed of with the assistance of the Post Office Department, who issued a fraud order against it. Without the use of the mails they could not operate.

In the other medical companies we were never able to make satisfactory progress until we secured the assistance of the Post Office Department, who issued them letters of inquiry, outlining the condition of a perfectly normal man, and receiving in return statements that the symptoms given indicated a serious disease and required immediate treatment. Upon the receipt of such a statement the Post Office Department took these cases before the federal Grand Jury and obtained indictments for using the mails to defraud. This rapidly eliminated them.

Secondly, we found the traveling faker, who heralded his arrival with a page advertisement in the newspapers, announcing the opening of his offices where he was prepared to administer some wonderful treatment discovered by him. Among the diseases he suc-

cessfully treated were tuberculosis, locomotor-ataxia, cancer, etc. If undisturbed he gathered all the money possible and departed for another city where he opened under the same or another name. The department's experience with one will illustrate their methods and the method of the department.

John Austin Larson arrived in the city, opened palatial offices and announced in the press his ability to cure all ills by means of a treatment, discovered by him, which he called the "science of telaconi." He was a chiropractitioner. He opened for business the morning following his advertisement, and his third patient was an officer of this department. He was arrested and locked up charged with holding out as a physician. He gave bond and returned to his office for business, having consulted an attorney who advised charging a consultation fee before seeing the patient. The same afternoon a woman from the department was sent to consult him and came back with the information of the fee required. He was left undisturbed until Sunday afternoon, when the woman again visited him, paid him a fee of $10 and received a treatment. He was arrested, and it being Sunday, he was unable to arrange bond and remained in the police "hold-over" until Monday morning. Twenty additional warrants were asked against him for holding out as a physician through the newspapers, but these warrants were denied until he had been convicted on the original charge. He fought for delay, but was forced to trial, convicted and fined $250 and costs. We then obtained the twenty warrants, and he left town, forfeiting his bond, and has not returned.

The most notable case in our experience of wholesale fraud, in this type of faker, was the establishment of a medical company known an the S. D. Nevling Specialty Company, promoted and financed by one John Weitzman of Chicago and Detroit. This company was also known as "The European Specialists." Nevling was a physician, registered and entitled to practice, who sold himself to the company that they might operate behind his license. This company confined their operations entirely to foreigners, carefully avoiding the English press in their advertisements which they inserted in the papers printed in foreign languages. They also distributed pamphlets in quarters inhabited by foreigners. The translation of these pamphlets is omitted for lack of space, but they were a revelation of ingenious solicitations to the sick. Their offices were very handsomely furnished and equipped with a number of impressive appliances. They advertised for interpreters speaking such languages as French, Italian, Bulgarian, Polish, Roumanian, Greek, etc. These advertisements were answered by men able to speak these languages, and they were engaged as interpreters. Upon reporting for duty they found that they were not only interpreters, but "physicians," although, the day before, their vocations had been waiters, bartenders, etc. They were known by their first names with the title of "doctor" prefixed, such as Doctor Tony, Doctor Walter, Doctor Albert,

Doctor Charles, etc. Their compensation and Nevling's compensation was $25 per week, and 5 per cent. of all the money they could get from the patient. At first Nevling received all the patients; but business running smoothly for a while they neglected this precaution, and each of the newly made "doctors" received, examined and treated patients. Upon the arrival of the patient he was taken into a room, required to remove all of his clothing and then was taken into an adjoining room for an examination. During this examination his clothes were searched for the purpose of ascertaining what money he had with him. He was then examined and without fail was found to be in a precarious condition, so serious, in fact, that a few days further delay would have rendered his case hopeless. One of the details of this examination was looking through him with an old camera with a broken shutter. This at that time was their "X-ray" outfit. We accidentally ran across this company in the office of the Circuit Attorney, where one of the victims was relating his story. This man had asthma and was employed in a planing mill. By their examination of his chest with the camera they found "one lung entirely destroyed and the other lung badly in need of cleaning." They proposed to furnish him a new lung and clean the other for the insignificant charge of $500, although $750 was their regular price. They had secured all his money, amounting to some $5 or $6 and had induced him to sign a blank check under the pretense that he was registering. They had found in this man's pocket a bank book showing about $200 as a savings account. Fortunately we were able to stop payment on the check for $200 and save this money for him. Just about this time one of the bartender "doctors" had a falling out with the manager and was assaulted on the street by two or three attaches of the institution. We succeeded in getting hold of this man who was in a frame of mind to give us every assistance, and we learned from him the details of the workings of the office. The offices were raided and everybody locked up. In addition all books and records and everything else not too bulky to be taken away, was removed by the department. With the information we then had in our possession we were in a position to act decisively. All those arrested were charged with practicing medicine without a license, excepting Doctor Nevling. We also secured warrants against all, including Nevling, for obtaining money under false pretenses. John Weitzman, the promoter of this company, attempted to kidnap our bartender "doctor" witness, was arrested for bribery and attempting to entice a witness, which is a felony. These people operated two weeks, had 90 patients and had collected in cash $2,000, which was but 15 per cent. of the fees, the balance of 85 per cent. was to be paid in installments.

The cases of the Chamlee Company and the Nevling Company I have given at some length because they are instructive of the methods pursued by this class of fakers.

The third class of illegal practitioners

are those who practice medicine in the regular way, but without a license to do so, and those who claim to cure by some peculiar method or system. They operate without advertising or the distribution of literature, depending for patients upon the recommendation of a patient. In this class is found the man whose license has been revoked; the graduate of a medical college unable to pass the State Board, and those people who practice by fortune telling, witchcraft, etc. A few cases are given illustrative of the methods of those who practice by appealing to the superstition and credulity of the patient:

Mary M. Shedd. Quartered in a fashionable hotel, claiming to cure epilepsy by sound waves from the piano. She placed the patient on one corner of the piano, with the furniture so arranged as to reflect the sound waves through the patient's body, during the playing of soft and soothing music. She was arrested, but escaped owing to defective information. She then left town.

August Pelinsky. Clairvoyant. His treatment consisted of placing a bucket of water and the patient's shoes under the patient's bed. It was necessary to so arrange the patient's shoes that the toes pointed to the north. During the time that the instructions were being given a music box was in operation. His price was $35 for curing any ill. Arrested and discharged by a jury, which is an illustration of what some juries will do.

Khrion. Clairvoyant. Cured by mesmerism. He could tell the name, business, etc., of anybody, which did not prevent him from diagnosing and treating the officers of this department for "nervous wrecks," charging them $2 for the treatment. Arrested and fined $50 and costs.

Susan Lawrence Davis. Quartered in a fashionable hotel. Charged $100 for a course of colon flushing, ten treatments to the course. Arrested and her first trial resulted in a hung jury. She was discharged by a jury at the second trial, in spite of the fact that a perfect case was presented against her. The only reason that we could assign for her release was that she was a good-looking woman. Encouraged by her success she resumed practice, was again arrested and fined $50; she then left town.

Moses Hellscher. Clairvoyant and medium. Cured all ills by making passes with his hands over the patient's head and looking into his eyes, for which he charged $2 a treatment, or $30 for a cure. It developed that the man's name was manufactured by him. He called himself Moses because he posed as a reincarnation of Moses; the last name, Hellscher, is the German name for clairvoyant, or light seer. He received patients and seated them in the front parlor, between which and the back parlor heavy portières were hung; the lights were turned low, and he excused himself to reappear a few minutes afterwards through the portières, arrayed in a brilliant robe, with the exclamation: "Behold Moses the second." Arrested, fined $500 and sentenced to 30 days in jail. He appealed, the case was remanded and he pleaded guilty, getting off with a fine of $50.

Rev. Herman H. Schroeder. An ordained minister. His treatment consisted of giving the patient pleasing literature to read, such as "Puck" and "Judge," which was supposed to put him in a cheerful frame of mind; the Reverend Schroeder then closed his eyes and sat for 15 minutes in meditation. In this way he "cured" deafness and blindness. He charged $2 a treatment. Arrested, but the prosecuting attorney for some reason prostituted his office in the dismissal of this case.

Any number of these cases could be cited, where the treatment was equally ridiculous, if lack of space did not forbid.

From April 1, 1908, to June 1, 1916, the department has accomplished the following results:

Number of investigations made	572
Prosecutions	252
Federal convictions	8
State convictions	149
Cases now pending	2
Fines	$14,692
Sentences:	
To jail	1
To workhouse	5
To penitentiary	2
Revocations of physicians' licenses	32
Revocations of midwives' licenses	3
Revocations of pharmacists' licenses	2

Our investigations of this illegal practice of medicine has developed the fact that a great amount of money has been taken from the sick by these human vultures, who not only rob the unfortunates who come into their hands, but are robbers of the community in which the victim lives, inasmuch as in a great number of cases every cent that the patient has, or could secure, has been taken, and it devolves then upon the taxpayer of his community to provide him with care and attention. Many of these victims mortgage their every possession to raise money to pay these people. It would seem that only the densely ignorant would fall victims to these practices, and yet we found many persons ordinarily considered intelligent receiving treatment.

In the case of the C. O. Wright Tuberculosis Cure (omitted here for lack of space), patients in the last stages of tuberculosis testified to the wonderful benefit they were receiving; many of them living but a short time afterwards, dying of tuberculosis.

The established medical company and the traveling faker, the two worst offenders, cannot operate without newspaper advertisements, and it would seem that the newspapers would not lend themselves to this type of robbers; but up to the time of the conclusion of our successful warfare on these people their advertisements were being continually received by most, if not all, of the newspapers of our city.

THE COUNCIL OF NATIONAL DEFENSE.

DR. FRANKLIN MARTIN,
Member Advisory Commission, Council of National Defense, Washington, D. C.

Address before the State and Provincial Boards of Health, Washington, D. C., May 3, 1917.

I WISH, gentlemen, that I were an orator, that I might adequately express what is in my mind and picture to you the problems we have before us.

The General Medical Board of the Council of National Defense is composed of thirty-nine of the leading medical men in the United States. The members of this Board were invited by the Secretary of War to serve as an advisory committee to my department, and in response to that invitation, these men from all parts of the United States have attended regularly meetings of the Board held on Sunday mornings at eleven o'clock in the offices of the Council of National Defense, Washington.

One of the principal committees acting under the direction of that Board is the Committee on Hygiene and Sanitation, of which Surgeon General Rupert Blue of the United States Public Health Service is chairman. We have before us now the resolutions which were read by the secretary a few moments ago. It will only be a matter of a short time, I am sure, before these resolutions will be recommended by the Council of National Defense and on their way to Congress.

There has been just a little hesitancy on the part of those here in Washington about forcing this matter until we had had the opportunity of a conference such as this, and until we had back of us the resolutions and support of your organization. While the "states' rights" question is an old one, we are constantly running into it. The visit of the governors here today will aid us greatly in coördinating activities of the forty-eight states of the Union with the work of the federal government, and after all, the conduct of the war must be directed by the federal government.

Therefore, Mr. Chairman, to make my statement as brief as possible, I would urge that your resolutions be handed in so that I may present them to the General Medical Board and secure the backing of this strong group of men, and assure them of your desire to coöperate. I am sure that the temper of the committees of the House and Senate is such as to carry these recommendations through. Senator Owen has repeatedly asked that we do this. He is now urging that we hasten matters as much as possible. He has an enormous amount of influence on the conduct of such legislation in Congress.

We are so filled with pride over the actions and developments of the last few days that we can scarcely speak of it, because of the great compliment that has been paid to the medical department of the military forces of this government. Monday evening, at the President's reception, where I had the pleasure of meeting

Mr. Balfour, in the confusion of introductions he heard the word "Doctor." He held me back and asked if I had anything to do with the problem of getting men to Europe, and if there was anything that could be done to aid immediately their medical group in France and England. He stated that the civilian population had been practically deserted and was quite without doctors, as they were all at the front—those who had not been maimed or destroyed during the war.

As the result of my conversation with Mr. Balfour the ranking medical officer of the British Commission requested six Red Cross units, to be turned over to the army in France. Those units will sail within ten days. Each unit numbers 196, 54 doctors and 50 nurses with the enlisted personnel, and they take with them their supplies. On Monday, Colonel Goodwin asked that we send over 200 doctors a month, the first to go within three weeks, and 200 nurses. These doctors are to be sifted into the ranks of medical officers in the British army along the western front. In one month we shall send another 200 doctors and 200 nurses, and every month regularly the same number. They will be of immediate assistance to our allies and at the same time receive their training in military medicine and surgery. In other words, our doctors will be trained in France and England during actual hostilities and in six months, when we send our boys over, these trained men will be attached to our troops. The doctors who go over with such troops as may go, will be trained there also.

That is the program, laid down within an hour after it had been suggested to the Secretary of War. The French have asked for 120 ambulance units. Each ambulance unit has a personnel of 70, 5 doctors being included. We are placing the furnishing of these ambulances in our priority list. We hope to have the ambulances at the time the personnel is ready to go, within three weeks.

There is much to tell, much that is gratifying, but I should like you to take one message home: If the man at the crossroads or in the city medical society says, "Well, how do I know, if I enroll, that I might not be sent to the trenches, or told to do something I am not fitted for, and until I know, I am not going to sign up," for God's sake tell him to either sign up and take his chances or else not to sign up and keep quiet—but not to clog the machinery at the rear.

The Surgeon General's office and our office have letters piled up that we have great difficulty in finding time to answer. They are not of sufficient importance. They are from men in the rear who are asking to be put in places selected by themselves. When they are assured of selected places they will enroll. Men can not be assigned to previously selected positions. The Surgeon General has a form letter that replies to that effect. This is war. We want men. We want them for service, and we want them to serve where they can be of most avail. We have a Surgeon General who has a force of men at his back with all the information they can give him, and he is in a position to decide

where a man is best fitted to serve, in a base hospital, a field hospital at the front, or in his medical school at home.

The need is great—almost too great to describe. The most dangerous work in this great war is the work done by the surgeons, the stretcher bearers, and those who are working along the immediate front. The surgeon has his job—the wounded come in, they must be attended to—an 18-inch shell from a distance of fifteen miles is no respecter of persons. He cannot do his work in a trench; he has to do it in a place suitable for that sort of work.

Now France and England have finally asked us to do something. It is so little compared to what we can do, that my advice is (and I am acting on that advice every minute) that we have no "pussy-footing," but fill the requisition immediately.

Extracts from Discussion.

Doctor Rucker, *U. S. P. H. S.:* Mr. President and gentlemen. Doctor Martin has placed before us the necessity for the care of the sick and the wounded. I wish to supplement the remarks I made at the Conference the day before yesterday bearing on what we can do in the prevention of illness among our troops.

I think, when all is said and done, we can admit it is a basic fact that the cornerstone upon which the winning of the war depends is health. I think that to us is committed the one absolutely vital and essential thing in the winning of the war. If we can maintain the health of the people in this country in a high degree of efficiency, we can produce the food, the munitions, the arms, the shelter, which our troops need. If we cannot maintain the civil population in a healthy condition, we cannot give to the military forces of the government competent forces of strong, healthy men.

We must realize that in this war there is bound to be an interchange and cross-interchange of infection between the civil and the military bodies, and between the military and the civil bodies. Therefore it behooves us who are in charge of the health agencies in this country to see to it that our work is done with an unusual degree of care and thoroughness.

One of the things which we must do is to insist that the appropriations for health work in the states and municipalities be not reduced. Already some of the states have very unwisely reduced their health appropriations in order to increase their appropriations for defense, losing sight of the fact that the greatest defense this nation can possibly have at this or any other time, particularly in time of war, is the defense of health. Therefore, I think our first duty is to see that the states and municipalities have the money to carry on not only their normal operations, but the added responsibility which comes with war.

The second point I make is this. That is that the governors of the United States, of the various states, are meeting here now. I think it is the duty of every state health officer present here now to go and see his governor and tell him of the resolutions which have been passed and to tell him that you have pledged your state health organization to the government, and that you expect him to back you up absolutely. Then he will go back to his home state, not with his mind filled entirely with strictly combatant matters, but with matters which bear upon both the civilian and the military health of his state. Now, I think that each one of you should make that your bounden duty, to see your governor today and express yourself to him so that he may understand the situation.

[At this juncture the President appointed a committee of three, consisting of Doctors Drake, Hayne, and Rucker to present to the Conference of Governors the resolutions adopted by this body. Later, at the request of Doctor Drake, Doctor Snow was appointed as chairman of the committee, increasing the membership to four.]

Doctor Rankin, *North Carolina:* I would like to get some expression of opinion on this point. As I understand it, there is going to be formed in this country, under a law passed by the Senate and House of Representatives, a Sanitary Reserve Corps. Of course we are all going to apply to the Surgeon General for admission to the Reserve Corps. Now, in addi-

tion to that, is it the sense of the members of the Conference that Doctor Martin wishes us and the executive staffs to also apply to the Surgeon General of the Army and sign up for enrollment as medical officers in the Reserve Corps of the army, so that we can be used in either capacity? Is it the understanding that we are to sign up in one group or two? Are we to say, "Use us wherever you choose," or do we restrict our application to sanitary work and not sign up with the army at all?

Doctor Rucker, *U. S. P. H. S.:* In the first place, I believe that a man should not hold two commissions. He should be either a fish or a duck. I don't think he should undertake to swim on top and underneath. I believe this, and I was getting to this when I was very wisely interrupted, that the personnel of the sanitary corps of this country should not be broken up and disrupted. All of us have heard of sanitarians of great ability being set to doing work a fourth-year medical student could do as well in the war abroad, and we should recognize the fact that we are specialists and have a duty to the civilian population which is just as important, if not more so, than any duty we could do in France or England, because after all, they must depend upon our civil population for food and men.

In the second place, let us not forget that this is a scheme for integrating this civil body with the medical bodies, making them available for the military bodies. My idea is this: Let us go ahead and get this Sanitary Corps mobilized, and as we go along it will be possible to make arrangements with the strictly military departments of the government whereby this reserve can be so utilized, and in that way we will be able to carry on our proper duty and at the same time render invaluable service to the military authorities.

I do not wish my remarks to be considered as tending in any way to interfere with anyone desiring to go with the military arms of the government, but I do believe that, so far as we are able, we should endeavor to place ourselves where we can do our best work for the protection of the civil health.

Doctor Tuttle, *Washington:* As I understand it, the U. S. Public Health Service has been made subject to call, at the discretion of the President, for service in either the army or navy, so that I should judge that any person to become a member of the Sanitary Reserve Corps, a part of the U. S. Public Health Service, would in that way also be liable for service either in the army or navy.

Doctor Rucker, *U. S. P. H. S.:* Yes, I should assume so.

Doctor Woodward, *District of Columbia:* I don't like to take issue with Doctor Rucker, but it seems to me that when fighting the battles of this nation, we must have one leader, the President of the United States. I made up my mind some time ago as to what was the proper thing to do, before war was declared, and I did it. I didn't communicate with the Surgeon General of the Army or the Navy; I made no application for a commission in the Officers' Reserve Corps; but I addressed a letter to the Secretary of the Navy and War which told who and what I was, and that I was ready to do any duty whatsoever for which I was deemed by them to be competent, and that if they wanted me in the medical service of the army or navy I would go. If they wanted me in an airship or submarine, I would go. I will follow the President. If they create an Officers' Reserve Corps I shall tender my services to that group, and I am going to leave to the President of the United States and his advisers the determination of the question as to where I am best fitted to work, and when I shall go.

My advice to the men here is to do the same thing—to trust the President. He will not disrupt the sanitary service of the country unless it is necessary for the maintenance of proper military forces. That is my position and I advise others to follow.

THE MENACE OF THE DUSTY TRADES.

W. Gilman Thompson, M. D.,
Professor of Medicine Emeritus in the Cornell University Medical College in New York City.

THE difficulty with the diseases due to the dusty trades consists, in great part, in the insidiousness of their mode of origin, for, with the exception of certain metallic dusts and those of some acids such as chromic and picric, the dusts produce very chronic symptoms of the respiratory tract which differ in no wise from those that may be acquired from other causes. Thus the chronic nasal and bronchial catarrhs, asthma, etc., induced by dust inhalation present no distinctive features, and are as often attributed to that vague process, commonly known as "catching cold" as to their real cause. It is, in fact, astonishing to note how frequently the continuous inhalation of noxious dusts, as, for example, that of cement, is regarded by employer and workman alike, not only as of no importance, but even as being beneficial to health. Further difficulty in assigning to different dusts their proper degree of harmfulness is found in the astonishing toleration which many workmen acquire for dust inhalation, at least in so far as complaint of symptoms is concerned. I have seen a woman who had worked for twenty years in the dustiest room of a paper mill, sorting rags, who declared she never coughed, and I have seen a sandblaster of castings, who had worked for years without acquiring serious symptoms under conditions which I could not personally tolerate for a day. A striking example of this matter is to be found in the case of streetsweepers and ashmen. On passing an uncovered ashcart on a windy day, one usually holds one's nose, or crosses to the opposite side of the street, yet the ashman spends most of the day in a cloud of sharp particles of silica and other components of the ashes. One would suppose that the work would induce frequent bronchial attacks and predispose to tuberculosis, but statistics show that the hazard of respiratory diseases among such workmen is no greater than that from hernia from the strain of lifting heavy barrels or from insolation in summer, and in neither case is it especially serious. A committee on Occupational Diseases with which I am associated, received an interesting report on this subject from physicians officially connected with the New York City Street Cleaning Department. This report showed that among nearly 6,000 sweepers and ashmen examined there were no more cases of incipient tuberculosis (from 1½ to 2 per cent.) than might be found among any large group of workmen. Possibly the outdoor nature of the employment is a counteracting factor. In the New York subways Dr. G. A. Soper has shown that a ton a mile a month of malleable iron is ground off

the brakes, and Dr. T. M. Prudden gathered this dust in quantity with a magnet run along the window sills of the cars. In the subway dust Doctor Soper also found cement, silica, stone, cotton and wool fibers, wood, molds and other refuse, 22 per cent. of the dust being organic. It was at first supposed that constant work under such conditions would produce respiratory diseases in excess, but Doctor James Alexander Miller after careful physical examination of a large number of the employees found that "they had no impairment in health because of their occupation," and many motormen gained in weight, or gained what they call "subway fat" because of their sedentary employment. The coal miners of England and Wales present a minimum tuberculosis mortality, although the coal sifters and stokers suffer much from anthracosis.

These examples are cited not in order to minimize the hazards of dusty trades, but to emphasize the difficulty of dealing with the question adequately through legislation, rather than through educational methods. While it may be possible to control a hazardous manufacturing industry through enforcement of laws of hygiene, in many industries the hazard may lie more in the subsequent handling or application of a substance than in its process of manufacture. For example, some of the numerous cement manufacturing plants in California take excellent precautions to preserve the health of their workmen, many of whom are employed continuously for years without exhibiting serious respiratory diseases, but a concrete mixer working independently outdoors may live in a perpetual cloud of dust. I have seen such a workman in Germantown who stood on a platform above a mechanical concrete mixer, emptying the sacks of cement which were brought to him by a continuous procession of fellow workmen. To say that I saw him is almost an exaggeration, so dense was the cloud of dust which enveloped him. It is precisely among such classes of workmen that reliable statistics are lacking, and, with a few exceptions the literature of the occupational diseases which are due to noxious dusts is very meager. It is true that insurance actuaries tell of the relative mortality from tuberculosis among workmen in many of the dusty trades, but reliable data are wanting concerning the incidence in such workmen of cases of rhinitis, bronchitis, asthma, pneumonokoniosis and many other ailments which are more or less incapacitating and certainly not unimportant. For the most part the dusty occupations, exclusive of emery grinding and other machine work, concern unskilled and therefore more or less ignorant workmen. They often change their occupation, either through economic conditions, or because, being incapacitated temporarily by one of the diseases under consideration, they leave their job, and subsequently take up some other employment. This of course adds greatly to the difficulty of tracing cause and effect. The subject is further complicated, in the absence of specific symptoms, in differentiating the factors of influence of home conditions, alcoholism, etc., which may produce the same diseases as those defi-

nitely caused by dusts—with the exception of fibroid phthisis.

There are very large groups of workmen employed in deleterious dusty trades, such as plasterers, wreckers of buildings, wood sawyers, cement workers, stone cutters, sand-blast workers, makers of emery wheels, potters, brick and tile makers, workers in grain elevators, workers in horsehair, furs, feathers, leather, workers in lime kilns and charcoal, workers in bone, shell and celluloid, workers in rags and paper, straw and broom, carpet cleaners, etc. And about the health and physical condition of such workmen, little more than general principles can at the present time be stated with any degree of definiteness. We are, therefore, greatly in need of extended health surveys of these industries, such for example as that inaugurated during the past two or three years by Doctor Hayhurst in his admirable work for the state of Ohio, and on a less comprehensive scale in the states of Massachusetts, New Jersey and Illinois. It is altogether premature to advocate controlling legislation for such industries until the actual menace of such hazards has been determined, not merely through cataloguing the number of obviously unhygienic factories or mills or plants, but by comprehensive physical examination of the workmen employed, with due consideration of their home conditions, duration of employment in the particular industries, and all other factors of importance. The American Public Health Association could do no more important work than to urge upon the several States the desirability of such surveys, for without state authority it is difficult to secure the data or meet the expense which exhaustive investigation entails.

Meanwhile, however, there is every reason to push forward an educational campaign through furnishing employers and workmen alike with information regarding the best means of mitigating those hazards of dust inhalation, which are perfectly obvious. Considerations of additional expense to the employer may in very many instances be met by pointing out the economic gain through increased efficiency of maintaining the workmen in good health. The present war will inevitably result for many years to come in a greatly reduced immigration of unskilled laborers for this country, and hence make it more and more difficult to replace workmen who have become incapacitated through the diseases under consideration. It is therefore "good business" to maintain those workmen whom we now have in optimum health.

As regards specific suggestions to employers, we are already in position to offer them without waiting for legislation. The open window is a first principle to be advocated for most factories and mills where dust is a menace, but there are some in which the windows must be kept closed to prevent outside dust from blowing in, as there are others in which they must be kept closed to prevent inside dust from blowing out. An example of the first condition is found where high grade paper and cardboard boxes are being made, which must be kept absolutely clean, and an example of the

second exists in factories for working in feathers or gilding with gold or silver foil. In other cases, where the dust is developed close to the workman's face, as in emery grinding, glass cutting, etc., a properly placed exhaust duct is essential and this cannot effectively be operated if windows are open. In some industries, as in working with horsehair or jute, the exhaust duct should be placed beneath the workman's feet, to prevent dust from rising to his face.

The sandblasting of large castings is at best a hazardous trade, but in addition to the workman's helmet he should be protected by a draft of compressed air directed from above and behind, so as to blow the dust away from him towards an exhaust at the opposite end of the cabinet. All lesser castings as well as pottery or porcelain ware requiring "scouring" with the sandblast should be held in a small closed cabinet, the workman's hand passing through a tight-fitting canvas or leather cuff, while he looks in through a small celluloid window. But how often does the employer think that having provided such means of protection, his duty is at an end, and proper maintenance is of no account! In a Bridgeport brass factory, for example, where small brass fittings were being scoured I saw well constructed cabinets, but with the arm openings slit wide open, so that the dust flew out all over the room! Another principle to advocate is the screening off in a large factory room of any of the work which is especially dusty, so that at least only those concerned in the more dangerous work need be exposed, and in many instances such work may be accomplished altogether by machinery, the feeding of the machine being conducted from the outside. I recall another instance of the failure of good intentions. In a paper mill in Massachusetts I saw a large rag sorting room. In the center was a small glass-screened room containing a rotary rag shredding machine—but half the glass windows were broken and dust lay about, both inside and out, several inches deep. The screening of such machines might be made compulsory by legislation, but without provision for frequent inspection, such a law would be worse than useless in giving a false sense of security. How often does this sort of thing occur with our factory ventilation laws, at least in the state of New York! Still another important matter is greatly in need of further study. I refer to the use of oil sprays to keep down dust where the use of water sprays would be impracticable. I found twenty cases of lead poisoning which had developed in the Brooklyn navy yard, several of the victims having come to my clinic. The workmen were common laborers employed in scraping off the red lead paint from inside the double bottoms of warships. They used chisels driven by compressed air. They had been given no instruction as to the hazard, no ventilation and no washing facilities, and the dust they raised was so dense they scarcely could see one another. One of the suggestions for betterment which I offered to the admiral in charge of the yard was that a spray of some form of mineral oil be

used to lay the dust. I know nothing of the detail of such matters but the suggestion appeared reasonable.

I do not believe in placing too much reliance upon patent respirators. In some industries they are well enough for temporary use, and it should be made compulsory to wear them, as in going in to empty the "blue beds" of lead carbonate, or to clean out pottery kilns or cement tubes. But for ordinary constant use, as a protection, for instance, in emery grinding, they are most fallacious. The workmen will not wear them for any length of time, and one as often sees the respirator hung around the workman's neck, as one sees his goggles worn over the forehead! Respirators are unbearably hot in warm weather, they soon become clogged, and the workman cannot talk or expectorate his tobacco juice with satisfaction. Women particularly are most reluctant to wear them, perhaps for the former of those reasons! It is far better, whenever possible, to rely upon other means of dust protection, for the workman is notoriously careless in protecting himself.

The more general use of oils to lay dust or floors is to be recommended in certain industries. In a cardboard box factory where this method was in vogue I was told that sprains had occurred owing to the slipperiness of the floors, but this is a minor objection for it easily is to be guarded against.

A further important matter is the elimination of projecting surfaces and ledges in the construction of factory rooms, which are so often entirely unnecessary, for in fact they frequently appear to have been constructed for the express purpose of collecting dust, and if cleaning be ever attempted, add greatly to the expense.

These elementary principles should be advocated generally and explained to employers as promoting efficiency. The problems of protecting the independent workman who is employed, like the concrete mixer outdoors, or like the plasterer or building wrecker, where protective devices are impracticable, is a much more difficult one. In my experience fully two-thirds of all cases of plumbism have developed among general janitors, especially those occupied in sandpapering dry paint and inhaling the dust of lead, together with sand, emery, etc. It is comparatively easy to protect such men in factories or workshops, but it becomes extremely difficult to do so when they are employed on "outside jobs." In all such cases physical examination by a physician at stated intervals becomes a matter of great importance to detect and give warning of incipient disease, and the same principle should apply to all workers in the especially hazardous dusty trades.

It is encouraging that an increasing number of employers, realizing that the preservation of the workman's health means an economic advantage are taking measures to secure this end, and the American Public Health Association through influence and definitely formulated precept can do a most beneficent educational work.

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PERSONAL HYGIENE AND WAR.

For the present at least, the epidemiological problem of the war, so far as the United States is concerned, is that of the diseases of direct contact. We have already become expert in handling most of the diseases of indirect contact, such as typhoid fever, and in this epidemiological group prophylaxis depends upon the work of expert sanitary officers rather than upon measures taken for the prevention of disease by the individual soldier. On the other hand, the control of the diseases of direct contact depends upon personal hygiene. Whenever large numbers of recruits are brought together in relatively close contact there immediately occurs an extension of those diseases which are spread by droplet infection, a form of direct contact. This explains the rapidity with which mumps, measles, epidemic meningitis, and whooping-cough spread through cantonments.

Leaving out of account the size of the droplets or the propulsive force, it may be roughly stated that the opportunities for the spread of disease by droplet infection are inversely as the square of the distance between the infected and the non-infected. Therefore, the closer individuals are brought into contact the greater is the opportunity for the interchange of infection by droplets. Hence, overcrowding increases the spread of those diseases whose causal organisms enter the body through the respiratory orifices. If the young soldier is trained in the habits of cleanliness, if he covers the mouth and nose in coughing or sneezing, if he is personally careful that he does not spread his infections to his brother soldiers, the respiratory diseases will be less apt to spread. As to those diseases in which the contact is even more intimate; for example, the venereal diseases, here also the answer lies in personal hygiene. Of course, personal hygiene only comes through one route; that is, by education. Education may come through careful teaching or through the lessons bought at the price of experience. Certainly, the former is the preferable method, and it would seem as though at the present time the health authorities of this country should push the propaganda of personal hygiene as never before.

W. C. R.

SOCIAL UNIT PLAN CONSULTS DOCTORS.

Movements to socialize medicine have quite frequently in the past been undertaken without consulting the medical profession. It is reassuring to learn of a new experiment in the socialization of health work which puts into the hands of the physicians themselves the task of working out the methods of the movement. Such is the purpose of the Social Unit Experiment which is now being developed in Cincinnati.

The first feature of the health work which the Social Unit plans to undertake is infant welfare. A station for the mothers of young babies is to be opened in a district in this city under the supervision of the physicians of that district. The staff in charge of the station will be selected by the medical profession of the district and they will be paid at rates agreed upon by the profession as adequate to insure members of the staff against financial loss from this service.

Thus, instead of importing into this territory outside physicians who would contribute their services, and whose clinical experience would be secured in practice on persons who might otherwise have been patients of the local doctors, the medical men of the local community are given the opportunity for clinical work on their own patients, under the direction of a supervisor selected by themselves and with a guarantee of reasonable payment for their work.

A considerable increase in the demand for medical service in the district is expected because of the fact that the Social Unit Plan aims to get in touch with the mother of *every* baby in the district and later to develop other types of medical service to meet the health needs of the community in a complete and thoroughgoing way.

A movement which starts out to improve medico-social conditions with the assumption that the interests of the profession should be protected, and that the advice of the doctors should be secured, is worthy of study and deserving of success. *J. H. L.*

OUR ADVERTISERS AND THEIR ADVERTISEMENTS.

We wish to call the attention of the readers of the AMERICAN JOURNAL OF PUBLIC HEALTH to the advertisements.

To advertisers we speak of the quality of the readers of the JOURNAL. We tell them that among their number are most of the more prominent health officials, national, state and municipal; that these officials purchase large quantities of supplies for their departments.

The average per capita expenditure of the readers of this JOURNAL is probably higher than that of any other journal of the country. Many of the products purchased by them are in the national market. This is rather exceptionally true of the products used by health departments and supplies used in preventive medicine generally.

In view of this fact the readers of this JOURNAL are especially in need of the news about articles advertised.

We now wish to direct your attention to the other side of the question.

Wherever there is any question advertisements offered this JOURNAL are submitted to the editorial board. Our advertisers have quality.

We wish to suggest to our readers that when they want the news about advertised products that they read our advertising columns. When they are in the market for supplies of any kind they should read the advertising columns of this JOURNAL and then give our advertisers the privilege of submitting bids.

If they are in the market for any supplies concerning which they are without the news, we will be glad to submit such news as we can gather for them.

If they will send us news items relating to budgets, intended purchases, or intended buildings or installations, we will be glad not only to publish the items but to put them in touch with sources of supply. *W. A. E.*

THE USES OF MORBIDITY REPORTS BY THE MINNESOTA STATE DEPARTMENT OF HEALTH.

A. J. CHESLEY,
Director Division of Preventable Diseases, Minnesota State Board of Health, Minneapolis, Minn.

THE uses to which morbidity reports may be put by a State Health Department depend upon the character of the reports, the time when they reach the department, the incompleteness of reporting throughout the state, and the departmental organization for communicable-disease work.

With few exceptions, the primary notification is made by post-cards or data cards for specimens, written by the attending physician at the patient's bedside.

The regular reporting post-card used for all notifiable diseases (actinomycosis, anthrax, Asiatic cholera, dengue, dysentery, (amebic and bacillary), epidemic or septic sore throat, favus, glanders, hookworm disease, leprosy, malaria, paragonimiasis, paratyphoid fever, pellagra, plague, rabies (human cases and exposed persons) Rocky Mountain spotted or tick fever, tetanus, trichinosis, typhus fever, yellow fever, anterior poliomyelitis, cerebrospinal meningitis, chicken-pox, diphtheria (laryngeal croup; membranous croup), erysipelas, measles, ophthalmia neonatorum, scarlet fever (scarlatina, scarlet rash), smallpox, trachoma, tuberculosis, typhoid fever and whooping-cough) is as follows:

43-8-15-16-20M—LOUIS F. DOW CO., ST. PAUL

As Required by Public Health Law I Report to the Health Officer a Case

Of.....*Township / City in the Village of..... Name of Place in..... Name of County Co.

At..... Give street and house number, name and location of hospital, farm, camp, section number, etc.

Patient's name..... Give full name, and for a child, parent's initials or guardian's name Sex..... Age.....

Date of first symptoms.....19..... month-day of diagnosis.....19..... month-day of report.....19..... month-day

Additional data required by **United States Public Health Service** for all cases of

SMALLPOX AND FOR **CHICKENPOX If 16 years of age or over.**

Case is *Virulent / Benign in type. Patient was

*(A) Successfully vaccinated within seven years.
(B) Successfully vaccinated over seven years ago.
(C) Never successfully vaccinated.
(D) Unable to give definite history of vaccination.

Signed: Dr..... of..... Minn.

Make a Card for Each Case of

Anterior poliomyelitis
Cerebrospinal-meningitis
Chickenpox
Diphtheria
Erysipelas
Measles
Ophthalmia neonatorum
Scarlet Fever
Smallpox
Trachoma
Tuberculosis
Typhoid Fever
Whooping Cough

The H. O., or C. B. S., should fill out the blanks below and mail this report to

Division of Preventable Diseases, State Board of Health, University Campus, Minneapolis, Minn.

I received this report.....19..... month-day and *Quarantined Isolated Placarded.....19..... month-day

Please send me..... Name what supplies are needed

Signed..... *M. D. Health Officer / *Chairman, Bd. of Supervisors

For.....*Township / Village, P. O. Address..... / City

*Strike out words which do not apply.

Data cards for specimens from cases, or suspected cases, of diphtheria, typhoid fever or tuberculosis, are of the same stock and size as the regular reporting post-card and are accepted in lieu of it.

The diphtheria data card is as follows:

8-1-15 5000

DIPHTHERIA DATA

Division of Preventable Diseases, Minnesota State Board of Health,
University Campus, Minneapolis

Please fill out this blank IN FULL and place around the small can.

Date and hour of taking culture..... .....Is this the first culture? .. ..

Patient's name..... .....Sex.....Age.....

*Township / Village / City } Residence.....County.....
(See other side if a Township Case)

Post Office Address.....
(Give street and house number; name and location of hospital, farm, camp, etc.)

Date of first symptoms .....Is membrane present?.....Temp.....

Clinical Diagnosis ....**See other side if in a Township**

This culture is *from a sick person for bacterial diagnosis.
from a recovered case for release from quarantine.
from a well person merely exposed to infection.

Physician .....Address.....

Health Officer.....Address.....

Do you desire a telegraphic report sent collect?..... .....Or culture outfits?.....

*Strike out words that do not apply. **(SEE OTHER SIDE)**

The typhoid data card is as follows:

8-1 15 10000

TYPHOID DATA

Division of Preventable Diseases, Minnesota State Board of Health
University Campus, Minneapolis

Date of collection.....This specimen for *diagnosis / vaccination data

Patient's name.....Sex.....Age.....

*Township / Village / City } Residence.....County.....

Post Office Address.....
(Give street and house number; name and location of hospital, farm, camp, etc.)

Special Diagnosis Data:

Date of first symptoms.....

Clinical diagnosis.....

Special Vaccination Data:

Date of { 1st inoculation..... / 2nd inoculation..... / 3rd inoculation.....

Has patient previously had typhoid fever?.....When?.....

Has patient previously been immunized?.....When?.....

Physician.....Address.....

Health Officer.....Address.....

Do you desire a telegraphic report sent collect?.....Or Widal outfits?.....

*Strike out words that do not apply. **(SEE OTHER SIDE)**

The sputum data card is as follows:

2-16 5000—LOUIS F. DOW CO., ST. PAUL

SPUTUM DATA

DIVISION OF PREVENTABLE DISEASES, MINNESOTA STATE BOARD OF HEALTH
UNIVERSITY CAMPUS, MINNEAPOLIS

Please fill out this blank IN FULL and place around the small can.

Patient's Name ..... Sex ..... Age .....

*Township / Village / City } Residence ..... County .....

Post Office Address .....
(Give street and house number, name and location of hospital, farm, camp, etc.)

Occupation: 1 .....
(At Present) Note: Use definite terms in giving occupations

*White / Negro / Indian { *Married / Single / Widowed } 2 .....
(At the time the disease appeared)

Coughing, how long? ..... Expectorating? .....

Date of collecting sputum ..... Have tubercle bacilli been demonstrated? .....

If so, when? ..... By whom? .....

Clinical diagnosis ..... Do you desire sputum outfits? .....

Physician ..... Address .....

Health Officer ..... Address .....

*Strike out words that do not apply. (SEE OTHER SIDE)

Primary notification for diphtheria is usually by data card accompanying nose and throat cultures for diagnosis. For typhoid fever it is usually the data card with blood specimen for Widal test. This is as it should be, but for tuberculosis too often the primary notification is the data card sent with sputum which shows tubercle bacilli. However, this late report is better than that of the death certificate which frequently is the only report made for tuberculosis cases.

Post-card reports reach the Division of Preventable Diseases, as a rule about twenty-four to seventy-two hours after the diagnosis is made. All cases and suspected cases of notifiable disease must be reported immediately to the local health officer in cities and villages, and to the chairman of the Board of Supervisors in a township, who forward the cards to the division as soon as they copy the data in their registers and carry out the prescribed measures for protection of the public health. Specimen data cards are received the same, or the first or second day after they are written, depending, of course, upon distance from the main or branch laboratory and transportation facilities. In cases not already reported to the local health officer this delay makes little difference, for copies of the laboratory reports on specimens are mailed to attending physicians and local health officers and report is made also by wire if so requested.

Immediate notification by telegram or telephone to the Division of Preventable Diseases is required when a physician is called to a case or a suspected case of actinomycosis, anthrax, Asiatic cholera, dengue, dysentery (amebic or bacillary), epidemic or septic sore throat, favus, glanders, hookworm disease, leprosy, malaria, paragonimiasis, paratyphoid fever, pellagra, plague, rabies (human cases and exposed persons), Rocky Mountain spotted or tick fever, tetanus, trichinosis, typhus fever, or yellow fever, or when a death occurs from any of these diseases. Poliomyelitis was added to this list temporarily by order of the State Board of Health July 11, 1916. Messages relating to this disease are being paid for from a special poliomyelitis fund during the present epidemic. This has enabled the division to keep in very close touch with the poliomyelitis situation throughout Minnesota.

The law states that "all local boards of health and health officers shall make such investigations and reports, and obey such directions concerning communicable diseases, as the state board may require or give," and under this law all sanitary districts can be compelled to report every case in full to the State Board of Health. Minneapolis, St. Paul and Duluth are the only exceptions made at present. These cities make monthly reports and give full information immediately to the division of Preventable Diseases for cases of the diseases reportable by telegram or telephone, and for other diseases when the case evidently was infected outside the city, or persons in another sanitary district have been exposed to infection. This information is used at once by the division in whatever way promises the best results, *i. e.*, personal investigation, reference by letter or telephone to local, state, provincial or federal health authorities concerned, etc.

State institutions are required to report within twenty-four hours after diagnosis direct to the Division of Preventable Diseases, and also to the local health authorities of the district in which the institution is situated. Sanatoria, hospitals, dispensaries, etc., receiving tuberculosis cases must make monthly reports giving full details regarding cases diagnosed in, or admitted to, or discharged from, or who died in the institution during the month.

The Division of Vital Statistics supplies the Division of Preventable Diseases with data from death certificates for notifiable diseases, and each death is checked to determine whether reported as a case. If not so reported, the matter is investigated.

Unofficial reports are derived from correspondence, from newspaper clipping bureau service and from other sources, and are systematically followed up.

The incompleteness of reporting throughout Minnesota is indicated by the fatality rates based on reported cases and deaths.

	Tuberculosis.		Epidemic Cerebrospinal Meningitis.		Smallpox.		Poliomyelitis.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1910	682	2,259	2	20	1,109	7	481	201
1911	731	2,456	0	44	1,439	7	115	58
1912	802	2,286	7	48	2,419	4	35	23
1913	2,516	2,227	18	10	2,864	7	85	30
1914	3,045	2,388	21	35	1,847	7	22	8
1915	3,859	2,280	25	29	1,708	5	123	26

	Diphtheria.			Typhoid Fever.			Scarlet Fever.		
	Cases.	Deaths.	Rate.	Cases.	Deaths.	Rate.	Cases.	Deaths.	Rate.
1910	2,092	566	27.1	1,985	688	34.9	1,095	284	14.9
1911	1,520	335	21.8	938	294	31.3	2,265	190	8.4
1912	904	173	19.1	783	233	29.7	1,827	104	5.7
1913	3,073	215	7.0	1,304	235	18.0	3,487	109	3.0
1914	4,683	354	7.5	1,784	225	12.6	6,655	322	4.8
1915	2,569	200	7.8	994	156	15.6	3,801	144	3.7

Fatal cases reported by death certificate only are not included under "cases." Therefore the fatality rates given are somewhat higher than the actual fatality rates. For example: Fatal cases in 1915 reported only by death certificate numbered 847, distributed as follows:

Tuberculosis	763
Poliomyelitis	21
Cerebrospinal meningitis	11
Typhoid fever	34
Diphtheria	18
Scarlet fever	00

Seventeen of the typhoid cases died in hospitals. Attending physicians excused themselves by saying that they expected hospital authorities to report. Hospital authorities stated they supposed the physician had reported.

Measles and whooping-cough reports are worthless at present. (In 1915: measles, 3,178 cases; whooping-cough, 555 cases reported.)

No disease is fully reported in Minnesota, but considering conditions and circumstances, it is evident that the physicians deserve credit for the improvement these figures show. Undoubtedly the follow-up work has had something to do with the improvement. It was begun late in November, 1912. That year only 8,129 cases of notifiable diseases were reported in the state. In 1913, the first year in which the follow-up system was in operation, the number of reported cases was 19,882 and since 1913 there has been a steady increase in reported cases. Of

all fatal cases of tuberculosis in 1914 only 14½ per cent. were reported in any other way than by death certificate, while in 1915 54 per cent. of the fatal cases had been reported previous to death. This was due to better reporting of cases by physicians outside of Minneapolis, St. Paul and Duluth, in districts lacking all the factors which tend to encourage reporting, *e. g.*, dispensaries, visiting nurses, etc.

The character of the reports, the time when they reach the department and the incompleteness of reporting throughout Minnesota have been touched upon. Now the departmental organization for communicable disease work will be briefly mentioned.

The Division of Preventable Diseases includes epidemiology, main and branch laboratories, and the Pasteur Institute. One branch laboratory is in Duluth. The other is in Mankato. The main offices, main laboratories and Pasteur Institute are in one of the buildings on the State University campus, Minneapolis. This makes it possible to file reports from physicians and health officers with the laboratory reports for diphtheria, typhoid fever and tuberculosis. The branch laboratories forward daily not only carbon copies of reports on all laboratory examinations, but also the original data cards received with specimens from cases with clinical diagnosis, "positive" or "suspicious," or laboratory findings, "positive," regardless of clinical diagnosis. It is easy to determine whether or not diphtheria cases, for example, are being released on negative cultures in accordance with the regulations. Laboratory examinations (except for certain institutions) are not made for the cities of Minneapolis and St. Paul, both of which have city health department laboratories, but the main and branch laboratories of the Division of Preventable Diseases serve all other parts of Minnesota. The branch laboratories take part in the follow-up work, but all supplementary reports obtained by the follow-up system are sent directly to the main offices in Minneapolis and are filed with other information relative to the cases. For example, the original post-card report, the data cards sent with blood specimens for Widal test and the epidemiological report, obtained through the follow-up system, are filed in one "open-faced" envelope with the original copies of the laboratory reports on blood specimens or discharges from a case of typhoid fever. In diphtheria, the release-of-quarantine card would be filed in the envelope in addition to the reports of the physician and laboratory. It is no hardship for the branch laboratories to furnish copies of all reports on examinations. Their reports are made in quadruplicate instead of triplicate as in the main laboratory and the extra carbon copy is sent to the main laboratory. Original copies are always retained in the laboratory files. The first carbon copy is sent to the attending physician, the second to the local health officer. Suitable circulars, follow-up letters, etc., are enclosed with the laboratory reports.

It is obvious that the morbidity-record work of the division is very important and that a constant watch must be kept by someone familiar with all phases of communicable-disease

problems throughout the state in order to carry out the following special duties of the division:

(a) To record, tabulate and study official reports of communicable diseases within the state, to check the completeness of official returns and to investigate unofficial reports.

(b) To make investigations of the existence, prevalence, source and modes of spread of all these diseases within the state and to report the findings promptly to the executive officer of the State Board of Health. Recommendations for abatement shall be made to the executive officer, either directly or after consultation with other divisions concerned.

(c) To supervise the adequacy of local administrative measures in dealing with the control of preventable diseases, and to report to the executive officer of the State Board of Health whenever the measures being taken by the local authorities are not deemed sufficient.

There is only one full-time local health officer in Minnesota. About twenty-five places employ school nurses. There are no district health officers. County health officers are usually appointed, but they have no jurisdiction in organized sanitary districts, and unorganized territory is wild and unsettled.

The division has two full-time epidemiologists and well-equipped, but undermanned, laboratories.

Whether morbidity reports are used as a basis for field and laboratory investigations, looking to the control of communicable diseases, is indicated by the following:

Between July 15 and September 30, on poliomyelitis work chiefly, the two epidemiologists traveled 18,341 miles by rail and 3,693 miles by team or auto. From January 1 to September 30, 1916, the main laboratory alone made 19,544 examinations, 9,629 being for diphtheria, 7,256 for Widal test, 1,866 for tuberculosis; for diphtheria virulence tests, 149; for typhoid isolation tests, 454. Laboratory examinations frequently determine the diagnosis and they are the basis of control measures in several diseases.

These points relate to the uses of morbidity reports, and have been cited chiefly to show why centralized filing of detailed cases reports received quite promptly after diagnosis is made, and constant study of the reported prevalence of disease, are essential to efficiency in the work of the division.

The routine uses of written reports are as follows: Upon each delivery of mail, the date of receipt is stamped on left border of reporting post-cards, which are filed by diseases in a small box and brought to the director. He examines every report, including primary notifications received with laboratory specimens, and refers, if necessary, to previously reported cases and correspondence and summaries of epidemiological investigations, and, according to circumstances, he may telephone or write to the attending physician or local health officer, or send an epidemiologist to investigate urgent problems.

When cases are reported by telephone, the health officer or physician is advised what to do until an epidemiological investigation can be made.

A report card is made out for each case reported by wire.

In epidemics special uses are made of morbidity reports. During the present poliomyelitis epidemic duplicate files have been kept for convenience, the original reports being used in the routine way, but not taken from their files. Pin maps, showing cases and deaths, have been kept up to date for the state and for the cities of Minneapolis and St. Paul. When a case is "pinned," the upper left corner of the card is cut off. When it has been reported by wire to the United States Public Health Service, the right upper corner is cut off. When it has been entered in the "date-of-onset" file, the lower right corner is cut off. When the epidemiologist's detailed case history is received, this is noted on the duplicate card. The history is typewritten, one carbon copy being returned to the attending physician, another being turned over to the orthopedist who is to follow up the paralyzed cases, and the original typewritten copies are bound in a loose-leaf cover. All investigated cases, with onset on a given date, are listed on 4 x 6 ruled white cards under this date. These cards constitute the "date-of-onset" file. Reports received during the day are written on a wall blackboard in view of a person at the telephone. Every morning the reports of the preceding day are copied on a "date-of-receipt" card and the statement at the top of the blackboard is corrected to show the number of different sanitary districts and counties invaded by poliomyelitis since January 1 and the total number of cases and deaths reported to date. Special statements are also made for cities and counties in which the disease is particularly prevalent.

Quite similar uses are made of morbidity reports sent in daily by epidemiologists or nurses who continue or supplement the work of the epidemiologist in epidemics of typhoid fever, scarlet fever, etc.

Reports required by the United States Public Health Service, aside from the previously mentioned reciprocal notification of cases infected outside of Minnesota, or leaving Minnesota while in an infectious condition, are compiled from the morbidity records and wired or mailed to Washington over the signature of the executive officer who bears the title of Collaborating Epidemiologist to the Service.

The statistical uses of morbidity reports in Minnesota are very simple. Monthly prevalence of notifiable diseases is reported to the auditor of each county on a sheet which has a column for each notifiable disease, and a line for each sanitary district in the county. Entries on these county sheets are made from the reporting cards, the entry being recorded by a blue line under "Co." on each card. A statement showing the prevalence of each notifiable disease in the state is sent with the county and morbidity report to the auditors, and a copy of a neostyle letter relating to public health matters of particular interest at the time.

Another statistical sheet for counties and sanitary districts, showing the number and age of male and female cases reported each month, is prepared from the cards and such entry on the

"Age and Sex" sheets is recorded by a blue line under "Age" and "Sex" on each card. These two forms of statistical records are used in compiling tables for the biennial report of the division, required by law. Smallpox has a special "Age and Vaccination" sheet which provides for classification of cases in the age groups according to vaccination history. Each sanitary district invaded by poliomyelitis, cerebrospinal meningitis, smallpox and typhoid fever has a sheet because the distribution of these cases is reported in detail to the United States Public Health Service. "Age and Sex" sheets for counties are prepared for all diseases but for counties only in diseases not specified here. Diphtheria, scarlet fever and tuberculosis have "Age and Sex" sheets for sanitary districts with a population of one thousand or more. When these statistical entries have been made, the fact is noted on the cards which are filed by disease under county and sanitary district. Reports for cases not terminated are kept in a running file which is checked from day to day. Supplementary information, such as case histories of poliomyelitis and rare diseases, always investigated, are included in the file when received.

When release-of-quarantine report is received, it is placed in the file with the other information relating to the case. The clerk from time to time checks the released cases. In doing this she takes the filing drawer and turns the cards with her left hand, while with her right hand she uses a date-calculating device. The essential parts of the date-calculating device are:

(1) A dial-like calendar on heavy white paper, made by dividing the circumference of a circle 16 inches in diameter, into 365 equal segments, each for a day and into 12 sectors, each for a month. The January sector includes 31 day segments: February sector includes 28 day segments, etc.

(2) A flat, metal "T" shaped arm is made to fit the circumference of the dial and to extend over about 44 day segments. Through the upper part of this arm, four slots are cut, each the size of a day segment. The first slot is at the left end. The others are 21, 28 and 42 segments, respectively, distant from the first. The calendar dial is placed between two discs, the lower of wood, the upper of heavy glass, bound together by a metal rim. A metal post, set in the wooden disc, passes up through a circular hole in the center of the dial and glass disc to act as a pivot for the arm which swings freely over the milled thumbscrew.

Without taking the cards from the drawer, the clerk reads the date of first symptoms and turns the indicator arm until slot 1 shows this date; then (in scarlet fever cases), reads the date shown through slot 21 and refers to the card reporting release of quarantine, which is next to the report card in the filing drawer. If the date of release precedes the date shown through slot 21, the cards are taken out and the case is investigated. If the date of release is later than the date shown through slot 21, the case is checked "O. K."

The release of diphtheria cases in rural districts more than two miles

from the nearest city or village, is checked in a similar manner. Slot 28 is then used. The patient is given the benefit of the doubt, it being assumed that early use of antitoxin clears up symptoms within a week or ten days and twenty-eight days after onset is approximately three weeks after disappearance of symptoms, the earliest time for release without negative cultures. Cases released with two successive, separate nose and throat negatives required in cities, villages and rural districts within two miles of same, average thirty-four days from date of onset. A rural case released without negatives is not permitted to attend school or public gatherings until two successive, separate nose and throat negatives have been reported to the local health officer, who then issues a health officer's certificate. Irregularities in the handling of communicable diseases are taken up with local authorities. Such irregularities are not frequent because of the follow-up work, the objects of which are:

(1) To give to health officers, physicians and affected families, information concerning the management and prevention of infectious diseases.

(2) To obtain accurate and complete Morbidity Reports.

(3) To apply to the control and prevention of diseases, the information gained through physicians' and laboratory reports.

(4) To supervise the adequacy of local administrative measures in dealing with the control of preventable diseases.

School nurses report names of sanitary districts from which nonresident pupils attend their schools. Copies of reports from such districts are sent by the division, to the nurses concerned, often enabling them to prevent the introduction of infection into their schools.

In addition to the other records an alphabetical card-index on 4 x 6 ruled white cards is kept for trachoma and tuberculosis cases and typhoid "carriers." The usual identification data are entered on this card and as the patient moves about, or changes occur in the physical condition, or laboratory examinations are made, the information is noted on the cards. In tuberculosis, for example, the patient is followed up as long as he lives in Minnesota. If he leaves the state the proper authorities are notified. This "Tuberculosis Life File" is very useful for field surveys.

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PUBLIC HEALTH NURSES AND CANCER.

A special bulletin, recently published by the American Society for the Control of Cancer, states that nurses, especially those engaged in public health work, can do much to prevent unnecessary deaths from cancer. It is believed that many patients, especially women, will speak to a nurse about the danger signals of this disease, such as lumps, persistent sores, and other irregularities, when they would hesitate to call a doctor. Attention to these apparently trivial conditions often means the actual prevention of cancer or at least its discovery in the early stages when the hope of cure is greatest.

RECENT DEVELOPMENTS IN THE DESIGN OF MUNICIPAL WASTE DISPOSAL PLANTS.

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Read at Section D-Engineering of the American Association for the Advancement of Science, December, 1916.

Summary.

THE important considerations in the construction of municipal waste disposal plants are discussed and an account given of improved processes for handling of such wastes; more especially as shown in the new plant now being built for the reduction of the garbage of the City of New York. Comparisons are made with older processes, both as regards methods employed and results secured. Objections to former processes and advantages and disadvantages of the new process are discussed both from the sanitary and commercial side.

Recent Developments in the Design of "Municipal Waste Disposal Plants."

The growing public interest in the general recovery of by-products heretofore wasted and in the effort to avoid the destruction of any useful materials has been especially evident in the discussion on the disposal of municipal waste. This interest has naturally been extended not only to the processes and methods used in the disposal of such wastes, but also to the matter of the ownership of such plants —that is whether they are to be municipally or privately operated.

From the standpoint of the public, however, every consideration in the design and construction of such plants should be subordinated to the question of their being built and operated according to the most sanitary methods. The first cost of the plant and its cost of operation should only be considered after the question of sanitation.

The municipal wastes above referred to consist of ashes, rubbish and garbage.

In the matter of the handling of the ashes and rubbish there have been no marked improvements during the last few years. "Filling in" with the ashes and incineration of the rubbish still continue to be the best methods when these materials are handled separately. When they are disposed of in combination with the garbage, high temperature destructors are used. Except in the matter of some of the details of the design and operation of these destructors, there have been no important improvements made during the last few years.

As to the disposal of the garbage of large municipalities two methods in the main are used. First, disposal in the high temperature destructor furnaces referred to above, and second, disposal by reduction processes, in the course of which there are recovered from the garbage, grease and low grade

ammoniates, both of which materials are of considerable commercial value. It is in the methods of reduction for the handling of garbage that the greatest inprovements have been made in the last few years. Formerly, where successful reduction processes were used, they were only of two types: one, where the garbage was mechanically dried in hot air furnaces and the grease then extracted by means of a chemical solvent and the material then re-dried so as to produce a commercial product. Second, where the garbage was digested, pressed and mechanically dried, the grease being extracted partly by pressing and partly by degreasing with chemical solvents.

These processes have been in use in all large American cities where reduction of garbage has been followed and in almost every case strong objections have been raised to the operation of such plants on account of the nuisances created. The main objections to these plants have arisen from the gases produced in the destruction of the garbage and from the gases discharged in the drying processes used in these plants.

To obviate these objections a new reduction process has lately been evolved. The operation of this process is as follows:

The raw garbage is placed in a closed tank which is sealed air-tight. This tank or reducer is constructed with jacketed walls and jacketed bottom. Into these jackets the steam, which is used in the reduction of the garbage is delivered, these jackets being so designed that it is impossible under proper operation for the steam to enter the tank or come in contact with the garbage. In the interior of this tank there is an agitating device operated by power from the exterior. When the proper charge of garbage has been placed in the reducer and the covers placed thereon, the tanks are sealed and the solvent is pumped into the reducer and steam admitted to the jacketed walls. The heat from the steam which is transmitted to the garbage through the walls of the reducer causes the evaporation of the solvent and the water in the garbage.

Garbage is usually composed of over seventy-five per cent. by weight of water. The steam heat vaporizes the solvent and the water from the garbage and these mixed vapors are drawn off from the reducer to the condenser. The economy in this method of evaporation rests on the fact that water is vaporized at a lower temperature when evaporated with a solvent having a low boiling point than when evaporated without such a solvent.

The mixed vapors of the solvent and the water while in the condenser are there condensed to a liquid state and the water and solvent together are conveyed to a closed tank. Owing to the solvent being of lighter specific gravity than the water, the solvent and the water are separated by gravity the solvent rising to the top from where it is drawn back to the storage tanks from which it is pumped back to the reducers and used over and over again. The condensed water which has been largely diluted owing to the jet condensers used, is discharged into sewers or waterways.

When the garbage has been thoroughly dried by this method, the solvent is pumped into the reducer and dissolves the grease. The solvent with the grease is drawn off into a closed tank or evaporator where the same is heated by steam pipes, where the steam is kept separated from the grease. The solvent therein is vaporized and carried to a condenser where the same is again liquified and carried to the storage tanks to be used again.

After the grease has been extracted from the garbage in the reducer, the garbage is further dried by means of the steam in the jacketed walls and is now in the form of de-greased garbage tankage which is used for fertilizer purposes after being ground and screened.

It will be seen from the above description of the process that if there are any leakages or vents in any of the tanks or piping where the solvent is handled more or less of the solvent is lost, and thereby a substantial additional expense is imposed upon the operation of the system. It is evident, therefore, that it is to the financial interest of the owner of the plant to see that the same is properly operated.

Furthermore, under this system the garbage is at no time brought in contact with the atmosphere, from the time of its original entrance into the reducer until after over twelve hours of cooking, it is finally discharged therefrom as finished products, dried, sterile and practically odorless. These finished products are grease and the tankage above referred to.

It will be seen from the above description, that the process is one of straight de-hydration and from the time that the material is at the boiling-point, no further chemical action in the material takes place. No process of "digestion" occurs and therefore the odors and gases incidental to such a process are not created. Only the volume of gas contained in the raw material is driven out and only the essential oils of an extremely volatile nature are carried over in the current of steam and solvent vapor evolved. That little or no conversion takes place in the operation is shown by the fact that in the de-hydrated material obtained at the end of the operation, there exists practically the same amount of unconverted starchy bodies as existed in the garbage at the time of its entrance into the reducer.

The water condensed contains all the gases evolved and has when fresh a slight odor of the mixed essential oils. Some traces of alcohol are detected in the effluent and a very small quantity of fixed oils is carried over. Any ammonia evolved, if it has escaped the acid in the garbage, is neutralized by acid carried over in the vapor. Whatever albuminoid ammonia exists in the effluent is carried over by mechanical entrainment as dust particles during steaming out of the solvent.

The effluent from this process consists of almost pure water, this water being the condensed moisture drawn from the reducer while the garbage is being treated and from which the solvent has been extracted as completely as possible. The effluent is cold and

gives forth no steam or vapor and is practically odorless, and as a result can have no undesirable effects when run into a large body of water.

The only other possible source of odor during the entire reducing operation would be from the odor contained in the air and gases mechanically included in the green garbage prior to its entrance into the reducer. These gases, plus the air in the reducer itself at the time of filling, are driven out by the first rush of solvent vapor. The entire volume of such gases is so small that no objectionable condition can be created by their discharge.

As regards any odor from the tankage, when this material is taken out from the reducer, it is in a dry condition and quite warm and when it is first exposed to the atmosphere, there is momentarily a slight odor of dried material best described as a smell of stale gingerbread, due to the essential oils rising from the material when hot. No gases are generated and this odor lasts only during the period of emptying of the reducer and is not offensive nor perceptible outside the building.

It will be seen that in the operation of garbage treatment by this process there is no period of gas generation and no large volumes of decomposition and combusion gases given off as in digestion and drying. There is, therefore, no necessity for condensing, washing or trapping odors or gases.

A further improvement has also been made in the solvent employed in the de-greasing process. Heretofore, gasoline has been used for this purpose but it has been proven that a more economical operation and elimination of the danger of explosions is obtained by the use of a kerosene distillate, obtained by the treatment of ordinary kerosene in a vacuum still.

The cost of a plant operating on the above system is from twenty-five to fifty per cent. more expensive than one on the digestor system. The cost of operation per ton of garbage by this system is also considerably higher than by the digestor system; the labor cost being about the same but the cost for fuel and solvent being considerably greater.

As against this increased cost, we have superior sanitary advantages and a considerably greater value of recovered products. By the use of this process a larger grease recovery is obtained, also a more valuable tankage. Where the digestor system is employed, the potash contained in the vegetable fiber, being soluble, is lost in the discharged water. With this process, it remains in the tankage amounting to over one per cent. by weight in the dried product.

Furthermore, with the digestor system the largest portion of the water contained in the garbage is removed by pressing. This water, discharged from the presses, carries eight per cent. of solids by weight and is the most valuable for fertilizer purposes as it contains all the ammonia and potash which is water soluble. All such material is recovered by this process.

Furthermore, with the digestor system where direct heat dryers are used, there results a large loss of solids (tankage, grease and fibrous material), averaging about twenty per cent. of

the total weight of tankage fed into the dryer. This loss is due to carbonization of the materials named and results in various odors and gases. This loss with the resultant gases, is avoided by this process.

The practical operation of this system has been demonstrated by the plants handling the garbage for the cities of Los Angeles, California, and New Bedford, Mass., and in the new plant now being constructed for the handling of the garbage of the City of New York this improved process will be employed. The New York City plant will have a capacity of over two thousand tons of garbage per day and will therefore be the largest of its kind in the world. Its construction will be of further interest in view of the fact that every possible improvement in the handling of garbage will be installed so as to enable the disposition of the garbage to be made in the most sanitary manner.

Further improvements have been planned in the transportation of the garbage to the plant. The barges in which the garbage will be transported will be so constructed that all water, drained from the garbage in transit, will be collected in a special closed tank located at one end of the barge. On the arrival of the barge at the plant these tanks will be automatically emptied by attaching a steam connection thereto and by means of the steam pressure blowing the drained water to tanks on shore; the steam also so acting as to disinfect the tanks. While in transit the barges will be covered by specially treated waterproof covers, so attached so as to prevent the discharge of any of the garbage from the barges.

A canvass apron will extend from the barge to the dock to prevent any of the garbage falling in the water during the unloading of the barge. This apron is so designed that it will automatically move with the barge when the same is moved along the bulkhead to bring the various portions of the load under the hoist.

All conveyors in the plant handling raw garbage are of the closed type to minimize the discharge of gases into the atmosphere.

From the above description it is evident that the introduction of this improved process in plants designed for the handling of municipal waste, although more expensive in first cost and cost of operation, insures a thoroughly sanitary disposal of such wastes, obviates nuisances and obtains a maximum recovery of commercial products.

DIAGNOSTIC LABORATORIES IN PUBLIC HEALTH WORK.

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IT IS not the purpose of this paper to discuss what chemistry and bacteriology, and chemical and bacteriological laboratories have done for the public health movement, nor to review the work that is being done by state public health laboratories. The diagnostic or so-called public health laboratory, occupies the same important place in the proper administrating of public health services as it does in the scientific practice of medicine. This is a conceded point and needs no discussion. The chief concern of state laboratories should be to keep their field of operation from becoming narrow and constricted.

As a rule there is but one state laboratory, located usually in the capital city, to supply service to all the physicians, veterinarians and health officers in the state. This laboratory is far removed from a large percentage of the physicians. The physician, for instance, who is located 100 or 200 miles away, can, with only the greatest inconvenience, use the laboratory, and even then it is not a diagnostic laboratory in the sense in which he thinks of diagnosis. It is purely a health laboratory. He is looking for the laboratory which can be of service to him in reference to the patient, one which will give him aid in making an early diagnosis, and therefore be a guide as to the treatment of the case. If it takes, for instance, twenty-four hours for a specimen to reach the laboratory, and if it takes several hours more for the culture to incubate, there are many cases in which a diagnosis must be made before the laboratory report is received, even though it be telegraphed.

This is well illustrated in the case of diphtheria. Under these conditions the laboratory is not a diagnostic laboratory in the sense that is understood by the average physician, but is purely a public health laboratory, the only benefit accruing being that to the public in that by keeping the patient isolated until negative cultures can be obtained, the community is protected.

This, of course, is worthy enough, and is the service which state laboratories have been supplying. But has not the time come—the physicians are realizing the importance of the laboratory as an aid in their practice, and the communities are realizing its importance as an aid in the early diagnosis of disease—for extending the scope of the state laboratory work? How this can be done I propose to discuss hereafter.

In the eight counties lying immediately adjacent to the one in which our laboratory is located, there are 443 physicians practicing medicine. Of this number 231 or 50 per cent. have made use of the laboratory in the last

six months. In the outlying counties, that is those which are not within such easy reach of the laboratory, there are 1,838 physicians, 732 or only 39 per cent. of whom have used the laboratory in the same length of time.

From the eight counties which are situated close to the laboratory, we received in the last six months 1,475 or 24 per cent. of all the specimens received during that time. The population of these counties represents only 16 per cent. of the total population of the state, excluding Milwaukee which has its own laboratory.

It further appears from these records that from 10 per cent. of the physicians in the state we received 24 per cent. of the total number of specimens received in the last six months. This is not from any lack of interest on the part of the other physicians, I believe, but because many of them are too far away to be able to make the laboratory of real service.

Distance and inconvenience are not the only disadvantages. The limited variety of examinations or tests which can be made is a serious fault. The detection of a typhoid carrier is seriously interfered with when it is necessary to ship the material over a distance which requires a twenty-four hour delay, and sometimes longer, in making the examination.

In some states tissue diagnosis is done as part of the laboratory work; in some there is a charge made, and in some it is not done at all. It is my opinion that this belongs as much to the work of a public health laboratory service as does the examination of sputum. It is further my opinion that there should be laboratories operated for public health purposes, required to do all work pertaining to the laboratory diagnosis of disease. This cannot be done in state laboratories as they are now being run in many states.

There are some states, I am aware, where the so-called public health laboratory or the board of health laboratory, has established branches. That is to say, states wherein the main or central laboratory is aided in its work by two or more branch laboratories located in that part of the state which is most in need of the service. This is well enough if nothing better can be done. It is superior to having only one laboratory.

Under existing conditions in many states, it is probably impossible to develop what has been suggested above, namely, clinical diagnostic as well as ordinary board of health laboratories. It certainly cannot be done where only one laboratory is maintained, nor can it be done completely by establishing branch laboratories wholly supported by the state unless the state has more money for this purpose than the most of them have, and even so I am of the opinion that that is not the way it should be done.

It appears that such a scheme can be accomplished economically and at the same time so distribute the expense that the greater part of it will fall upon those who get the greatest benefit, by a plan of state and municipal coöperation, the city bearing the greater part of the expense. The state should put in enough money to pay for the work which is done for the

physicians and others, who live in the outlying adjacent districts, and the city should supply the rest. The laboratory should be required to do all examinations and render all laboratory service requested and required in medical work both for physicians in the city and those outside. When it is feasible, it is to be desired that the laboratory be established in connection with a hospital thereby raising the standard of the institution and giving the patients the benefits which would accrue from having a good laboratory convenient for the physician. The director in such a case would also be the hospital pathologist.

At least two such laboratories can be aided by the state for the amount that it takes to establish and operate one which is wholly supported by it, and too, a large number of cities which, on account of their size, are unable to wholly support a good laboratory, can take advantage of such a scheme to secure one.

The state central laboratory should be maintained solely for the purpose of research, and the director should have supervisory control of the state cooperative laboratories.

Such is the scheme now being put into operation by the State Board of Health of Wisconsin. They have already established two coöperative laboratories and have applications for others.

There are many advantages in having such a system of laboratories:

The aid of a laboratory is brought in easy reach of every physician in the state, rural and city, and can therefore be used as an aid in his practice.

The influence in the community for good in the way of proper thinking about disease and infection will be greater, and a great deal will be accomplished to overcome the feeling of antagonism for laboratory and public health work in those places where the proper interpretation has not been made of laboratory diagnoses, and where only one physician in a town can afford a laboratory assistant. In the latter case it often happens that through jealousy and a fear of their competitor, many of the physicians will not accept or acknowledge the value of laboratory diagnosis.

WASSERMANN TESTS.

In the *New York Medical Journal* for June 30, 1917, Dr. R. C. Rosenberger says that during 1916, 5,106 Wassermann tests were made at the Philadelphia General Hospital. Of these, 4,430 were performed with blood serum, and 676 with the spinal fluid. Three antigens were used, namely, an alcoholic extract of syphilitic liver, an acetone insoluble lipoid and a cholesterinated alcoholic extract of beef heart. Of the bloods, 27.4 per cent. were positive and of the spinal fluids 22.2 per cent. gave positive results. The cholesterinated antigen was found to be by far the most sensitive. Using a reliable antigen, the Wassermann test is the most valuable aid in the diagnosis of syphilis.

A CHECK FOR THE REGISTRATION OF BIRTHS.

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Read before the Section on Vital Statistics of the American Public Health Association, Cincinnati, Ohio, October 24, 1916.

GIVEN a good registration law and able registration officials, the problem of more complete registration of births then resolves itself into finding a satisfactory checking system.

How are registration officials to learn of unreported births? Many partial checks have been devised, such as comparing, with the official birth records, the baptismal records of the clergy, the death certificates of infants and young children, (1) the admissions to hospitals for infants, the lists of babies entered in baby shows, (2) the lists of births obtained by members of women's clubs, (3) the lists of births obtained from those who sell "baby carriages, cribs and high chairs," the birth notification cards voluntarily sent in by insurance agents, the birth notices in newspapers, and later on, the names of children who apply for copies of their birth records to enable them to enter school or go to work. All of these comparisons have value, each one permits a partial check, and each one, in a state where birth registration is poor, doubtless will bring to light many unreported births.

A special canvasser has discovered annually in Boston hundreds of such births. (4) "A state inspector is constantly employed in Pennsylvania and has been instrumental in securing many thousands of births."

Attempts have also been made to ferret out births by sending beautiful birth certificates, suitable for framing, to every known mother, hoping that mothers, who did not receive such certificates, would apply for them. A similar attempt was tried recently in New York City, for a New York newspaper account read—"One of the special features of baby week will be the presentation to each baby born during the week of a certificate signed by Mayor Mitchel and Health Commissioner Emerson, with a copy of the seal of the City of New York." In some places, as a special inducement, physicians have been paid twenty-five cents for each birth reported, though the wisdom of such a plan has been questioned. Doctor Trask says, (3) "This custom is likely to create in the minds of many the idea that the registration is a matter of discretion, that if the fee is not wanted there is no compulsion to file the certificate and that the forfeiting of the fee annuls the obligation." Finally, (7) complete lists of births have been published in the daily newspapers in the hope that omissions would be noticed. But just as a large number of remedies for any disease indicates that no real cure has yet been found, so the very number of these methods and checks for disclosing unreported births indicates that no really satisfactory method has yet been devised.

However, there is one method, mentioned above, which I believe is capable of such elaboration that it can be made really effective. I refer to complete lists of births in the daily papers. The chief objection to this method in the past has been that it furnished addresses, which were used by (5) credit furniture dealers, druggists and makers of patent foods to pester families with (6) samples and advertisements. But this objection can be readily overcome. To illustrate the proposed elaboration, a notice and a list of births are here given as they would be published in a newspaper of May 15, 1917:

REWARD OFFERED

for notification of any unreported 1917 birth, which occurred in the city before May 3. A birth which has not appeared in this column has not been reported. If you know of any such birth, report it at once to the City Registrar and receive a reward of twenty-five cents and a button.

The dates of births are given below followed by street addresses, in alphabetical order. For the last figure of an address number a dash is substituted. The word (Reward) following an address means that a reward has been paid.

DATE AND PLACE OF BIRTH.

April 6 – Chestnut St. (Reward)
May 1 1– Arlington St.
43– Brown St. (Reward)
May 2 34– Adams St.
156– Harvard Ave.
8– James St.
32– Wellington Park.

This list shows that the birth on Chestnut St. occurred at some number from 1 to 9, the birth on Arlington St. at some number from 10 to 19, the birth on Brown St. at some number from 430 to 439, and so on. For the next day's paper, May 16, 1917, the heading would be the same, except that the reward would be for notification of unreported births which occurred before May 4. No names of children or parents should be given. The word (Reward) shows to the public that the doctor did not report the birth at that address, while the fact that the word (Reward) does not appear in the above list after the second address, 1– Arlington St., shows that the delinquent doctor reported the birth before the neighbors did.

Under such a plan parents would watch the newspapers for the birth report of their child, and bright boys and girls as well as adults in the neighborhood would watch for any omissions in the daily list. Inasmuch as this is a button age for school children, a button could be given as an additional inducement. Buttons could be made with simple designs like the following:

1917	1917	1917
Boston	Boston	Boston
Births	Births	Births
1	2	3

A button of the first design could be given to any person who finds an unreported birth; if later this individual discovers a second birth, the first button could be exchanged for one having a figure 2, and so on, the figure on the button always indicating

how many births the wearer has discovered. This plan would furnish a big corps of registration officials throughout the city. Public health nurses, dispensary nurses and policemen could be required to examine these lists daily for any omissions in their districts. The cost would be small. People would dislike to have the births of their children reported late. Physicians would dislike to have their carelessness thus published to the community. The substitution of a dash for the last figure of a street number would prevent use of the list by advertisers and yet would permit neighbors to check the births. In a locality composed of tenement houses containing several families at each street number, no harm would result if complete numbers were published.

(7) One city has used newspaper lists of births giving the names of parents but not the addresses; but this plan permits advertisers to look up the addresses in the directory, and furthermore, does not permit such a complete check, as would a list by streets, for those having common surnames like Smith and Jones or uncommon foreign names.

The Model Law has proved such a great success that it probably will be changed but little, when the subject of revision is considered in 1919. However, a requirement that notification of a birth be sent within forty-eight hours to the local registrar, would be a decided improvement. It would permit public health nurses to visit the babies earlier, and it would permit the newspaper lists to be made up from the notification cards, so that a paper dated May 15, could publish births which occurred as recently as May 10, thus ensuring a more accurate check by the neighbors, for a baby is a bit of news for the first few days.

The net result of this reward and button scheme should be a most efficient check upon birth registration, a check not only for the use of the local registrar, but one equally as good for the state registrar, the Bureau of the Census, or the public generally, for the working of the registration law in any place would become at once an open book for anyone who read the newspapers. If a great many rewards were given, people would ask why more physicians were not prosecuted. On the other hand, if few births were reported after the legal limit, the people could congratulate themselves upon the efficiency of their registration laws and officials.

References.

(1) Report of Committee on Birth Registration. Trans. Am. Ass'n Study and Prevent. Inf. Mortality, 1911, p. 58.

(2) Mr. Lewis Meriam. Trans. Am. Ass'n Study and Prevent. Inf. Mortality, 1913, p. 311.

(3) Vital Statistics. Dr. John W. Trask, Assistant Surgeon-General U. S. Pub. H. Service, p. 25, and p. 22.

(4) Dr. Cressy L. Wilbur. Preventive Medicine by Dr. M. J. Rosenau, p. 881.

(5) Dr. C. E. Ford. Trans. Am. Ass'n Study and Prevent. Inf. Mortality, 1913, p. 307.

(6) Dr. L. Emmett Holt. Trans. Am. Ass'n Study and Prevent. Inf. Mortality, 1913, p. 310.

(7) Dr. William C. Woodward. Trans. Am. Ass'n Study and Prevent. Inf. Mortality, 1913, p. 318.

VISCERAL CHANGES IN WOOD ALCOHOL POISONING BY INHALATION.

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Read before the Annual Meeting of the American Public Health Association, Section of Industrial Hygiene, Cincinnati, Ohio, October 27, 1916.

PART I. THEORETICAL.

1. *Introductory.*

VERY few investigations have been made of harmful effects of inhalation of methyl alcohol—I am referring to the work of Eulenberg (1), Poincaré (2), Tyson and Schoenberg (3), and Loewy and Heide (4) and Mueller (5). Of these only Poincaré and Tyson and Schoenberg have studied the histo-pathological changes. But these results, although not numerous, leave no room for doubt as to the extremely dangerous effects of inhalation of wood alcohol. To quote Tyson and Schoenberg: "There exists a striking similarity between the effects of ingestion and the inhalation of wood alcohol."

The work of Loewy and Heide is of very great importance and interest as they were the first investigators to study the question of the relation of concentration of methyl alcohol in the air to its absorption.

2. *Pharmacological and Chemical Data.*

In comparing the effects of ethyl alcohol with those of methyl alcohol one is confronted with the fact that a single dose of the former is more poisonous than the same dose of the latter.

As pointed out by Harnack (6), Fuehner (7) and others, the intensity of action (*Wirkungsintensitaet*) of equimolecular solutions increases with the increase of the number of atoms of carbon, as well as with the greater solvency for lipoid substances (Meyer Overton), and inversely as the surface tension of the solutions. (When, however, the number of carbon atoms reaches 7, *i. e.*, after heptyl alcohol is reached, these laws are no longer true since the higher alcohols, such for example as cetyl alcohol, are almost solid, insoluble in water and are as a rule non-absorbable.)

These investigators claim that ethyl alcohol, *i. e.*, its action, is from two to four times as strong as that of methyl alcohol in single doses,—for example, codeine (a methyl preparation of morphine) is much weaker than dionine (an ethyl preparation of the same alkaloid).

But Pohl (8) observed experimentally that while no bad effects followed immediately after the administration to an animal of a small dose of methyl alcohol, very serious results were noticeable a few days later, the experiment in many instances terminating fatally. If a small non-lethal dose be repeated a few times fatal issue occurs invariably, while ethyl alcohol, similarly administered, produces no such effects.

How are we to explain such paradoxical phenomenon? Why does a substance, non-lethal in a single dose, become lethal after a few repeated doses, and *vice versa?* The explanation as given by Pohl is as follows: Ethyl alcohol is very rapidly oxidized in the animal body, in fact so rapidly that over 90 per cent. of it is converted to carbon dioxide and water, whereas methyl alcohol is oxidized very slowly, with the formation of formaldehyde and then formic acid.

It is formic acid and its cumulative action that is responsible for the untoward effects of methyl alcohol, the variability of individual results depending on the individual power of oxidation, the action of wood alcohol thus becoming especially dangerous in those who are ill nourished.

Placet (9) constructed the following table showing the difference in the elimination—that is, the rate of elimination of the two substances.

In other words, the complete elimination of wood alcohol requires five times as much time as that of ethyl alcohol, and we are dealing here with a cumulative action.

In rabbits the elimination of wood alcohol while faster than in dogs is

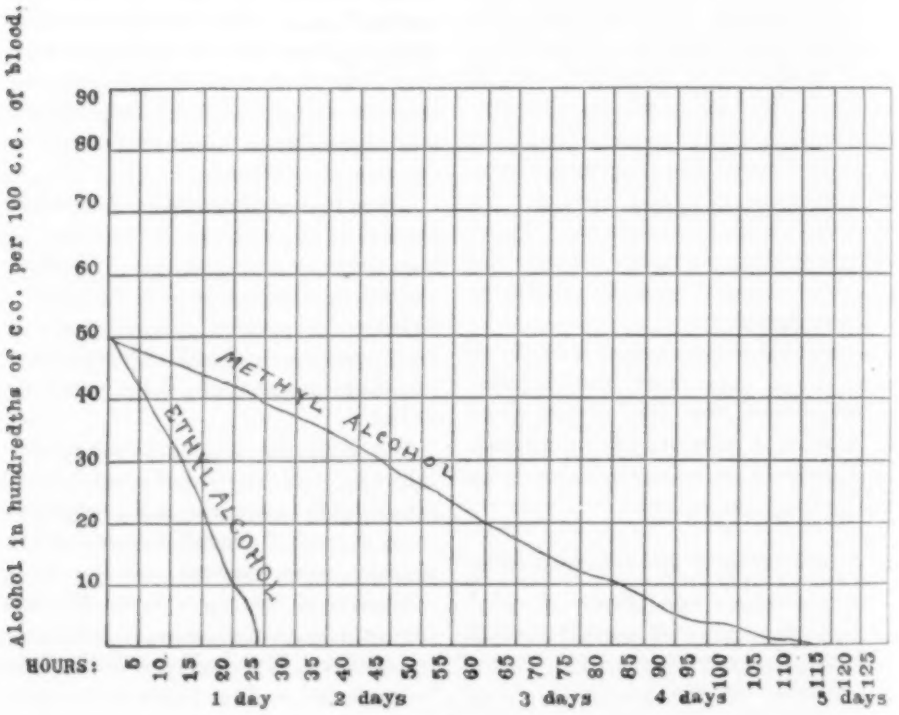

CHART 1.

The curves of elimination of ethyl and methyl alcohol after ingestion of 5 cc. of alcohol per kiloweight, in the form of a 10 per. cent solution. (Dog.)

three times as slow as that of ethyl alcohol. Because of the relatively more rapid elimination of wood alcohol in rabbits than in dogs I have chosen the former for my experiments since the results obtained with them will be at least as significant as those obtained with any other animals and I shall be spared a possible reproach for having used the animals in which the elimination was the slowest, and, *pari passu*, the pathological changes the greatest.

The histo-chemical investigations of Placet (9) show that the power of fixing methyl alcohol varies with the different tissues, the following organs being given in the order of their affinity: brain, liver, kidney and muscles. This statement of Placet finds abundant confirmation in the results of my experiments.

Possessing a marked affinity for certain tissues, methyl alcohol very slowly undergoes oxidation to formic acid which, as we know, has to be neutralized in one of two ways: either by protein-split ammonia if the animal has some stored protein for this purpose, such neutralization eventually leading to protein starvation, or by the alkalies of the blood (and this happens invariably when there is no ammonia), such neutralization leading to acidosis. These are the systemic effects, in addition to such well-known local manifestations of intoxication as optic neuritis, etc.

As to the various circumstances governing the inhalation and absorption of methyl alcohol, the questions which naturally suggest themselves are: What relations exist between the concentration of wood alcohol in the air and quantities which are inhaled into the lungs? How much time is necessary for the saturation of the body with it? For the production of harmful effects? What is the maximum quantity of wood alcohol inhaled which is still compatible with life?

Wood alcohol is very readily absorbed into the body from the pulmonary surface. Loewy and Heide have shown that inhaling the air in which wood alcohol is present in so slight concentration as 0.2 per cent. for two to eight hours leads to its accumulation in the animal body in the quantities varying from 0.32 to 0.55 grams per kiloweight, which means that if a person weighing 60 kilograms (about 150 lbs.) inhales the air in which wood alcohol is present in the proportion of 0.2 per cent for 8 hours, at the end of this period there will accumulate in this body about 25 grams of wood alcohol, which is a considerable amount bearing in mind the extremely slow oxidation of this substance. (See Chart 1.)

As to the rate of absorption, this depends entirely on that of diffusion, which is of course most rapid at the beginning of inhalation when the difference in the partial pressure of methyl alcohol in the air and that in the pulmonary blood is the greatest. When (and this happens very soon because of the slow elimination of wood alcohol) this difference is equalized, the rate of absorption will depend solely on the rapidity of elimination of wood alcohol by the animal body. In other words, absorption of wood alcohol is most rapid at first,

quickly becoming slower and slower until it becomes entirely dependent on the elimination.

Part II. Experimental.

Twelve rabbits, with controls, were used, one half of the animals being subjected to inhalation of Columbian Spirits, and the other to that of commercial wood alcohol (both brands were purchased from Eimer and Amend, New York).

It was of utmost importance to create atmospheric conditions as similar to those which prevail in ordinary workshops as possible, and with that purpose in mind a wooden box was built according to the specifications evolved by Tyson and Schoenberg, with suitable openings and mica valves, sufficient draught being allowed to insure a very fair ventilation, the temperature being about 68 F. throughout the entire length of the experiment, with hygrometric readings being invariably about 60 per cent.

The animals were very carefully looked after, and were placed under the best hygienic and sanitary conditions (thus having a decided advantage over the great majority of workers).

Both wood alcohol and Columbian Spirits were administered as follows: A piece of cotton large enough to soak up 1 ounce of either substance was suspended from a hook in the ceiling of the cage for periods of time varying from 15 minutes to one hour, three times.

In no case was it necessary to increase either the amount of the substances used or the frequency and the duration of exposure to inhalation. In fact, the first three animals died within 6–10 days after 15 minutes' exposure, three times a day, with one ounce having been used, when it became necessary to decrease the quantity of wood alcohol and Columbian Spirits to one-half of an ounce.

The animals—except those three which died within 10 days after the experiment had been begun, were permitted to live 2 months, 4 months, 6 months, 8 and 10 months, respectively.

The most striking observation was the uniformity of lesions (practically in every case the same organs, and those only, were involved), the extent of lesions varying with the duration of time exposure, thus the fatty degeneration of the cardiac muscle or destruction of the perenchyma cells of the cerebrum being more extensive in the rabbit which had been exposed for 6 months than in the one which had inhaled wood alcohol or Columbian Spirits for but 2 months.

Another interesting observation was the fact that neither macroscopically nor microscopically could there be detected the slightest difference between the effects of the "ordinary" commercial wood alcohol and those of "refined" or Columbian Spirits—in fact, should one be disposed to do so, he could properly maintain that the latter is, if anything, a more violent acting poison than the former, since the two most severe cases of destruction of the cerebral parenchyma were observed in the cases of inhalation of Columbian Spirits.

Of course, one might expect *a priori* that there would be no difference, since mere masking of the odor and

possible removal of certain impurities can in no way be expected to prevent or mitigate the physiological action of formic acid—the true *modus operandi* in the cases of poisoning by wood alcohol.

On what some of the manufacturers base their claims that the "refined" product is "quite harmless" is rather uncertain, I should think, unless they are of a very trustful disposition. One might as well try to "deodorize" and "refine" bromine and proclaim it, *eo ipso*, "quite innocuous."

Because of the striking uniformity of lesions it is unnecessary to go into each protocol or description of histological picture separately, a general discussion being sufficient, providing one bears in mind that the extent of the various lesions is directly in proportion to the length of exposure.

As noticed in the theoretical part of this study (Placet, Loewy and others), the central nervous system—notably the cerebrum—appears to bear the brunt of the attack, it being together with the optic nerve the most frequently as well as the most extensively involved organ. Next in frequency, but not necessarily in extent, of involvement are the kidneys, the liver, and the muscle—the latter again showing a very marked inequality of involvement, the cardiac muscle being affected in every case while the striated and the smooth muscle were involved but in 10 per cent. of the cases.

This limitation of lesions to the above organs brings us face to face with another deduction, namely that in so far as distribution of the lesions is concerned (and it will presently be shown that this applies to the nature of lesions as well), there appears to be no difference between the effects of wood alcohol when imbibed and when inhaled.

The lesions found in the various parts of the cerebrum, the cerebellum, the medulla and the pons consisted of different degrees of inflammatory and degenerative processes. Macroscopically the tissues appear yellowish, glistening; the line of demarcation between the gray and the white matter is not as sharp as in the control animals, in the more prolonged cases the gray matter appearing quite thinned—the entire picture being one of a non-specific atrophy.

Microscopically, the neurocytes are diminished, assuming a spindle-like shape. Nissl's granules also are diminished, with brownish pigment scattered here and there.

In the more severe cases the parenchyma cells are greatly reduced in numbers as well as in size. Thus, for example, the brain of the rabbit which had been exposed to the inhalation of Columbian Spirits showed practically nothing but neuroglia cells and no trace of parenchyma cells, the latter being represented by masses of granular debris and fat droplets, partly taken up by the so-called contractile cells, *i. e.* leucocytes, lymphocytes, and according to Birch-Hirschfield, endothelial cells.

The different stages of parenchymatous degeneration depend, of course, on the length of the exposure to which the animal has been subjected, the nuclear changes varying from the wandering of the nucleus to the

periphery of the cell to the total karyolysis.

My impression is that the apparent increase of the connective tissue is due not only to the fact that the parenchyma cells have disappeared, but to the actual proliferation of the fixed tissue cells, as seen by the very marked thickening of the adventitia and the media of the blood-vessels.

The entire microscopical picture corresponds very closely to Adami's "exhaustion" condition,* which is "anatomically recognized by the disappearance of cells and fibres and the secondary overgrowth of glial tissue filling in the space."

The lesions of the liver and the kidney present, both macroscopically and microscopically, the typical characteristics of albuminous degeneration (cloudy swelling) and fatty degeneration—the increased size of the organ, softened consistence, the tissue being almost friable (*etat crible*), glistening yellowish color, the protoplasm being uniformly dull-gray, the outline of the cells in most cases being altered or lost. The nuclei are much smaller than they normally are, lost in many cases, and appearing as vague, shadowy structures in others. The cell bodies are filled with granular, dust-like masses.

In cases of long standing, in addition to the above general appearance there is also a marked increase of the connective tissue, especially around the blood-vessels.

The muscle cells, especially the heart, present an appearance very similar to that of the liver and the kidney, as well as both fragmentation and segmentation, in some of the cases.

The lung shows in many cases patches of broncho-pneumonia, which, however, are not uniform, either in distribution or in extent.

*Adami and Nicholls, The Principles of Pathology, 1911, Vol. II, p. 526.

Part III. Conclusions.

1. Wood (methyl) alcohol when administered by inhalation is as dangerous as if absorbed by ingestion.

2. The effects as revealed by the study of lesions depend primarily upon the concentration (which in its turn depends upon the ventilation), and the length and the frequency of exposure.

3. No appreciable difference has been noticed between the effects of the ordinary commercial wood alcohol and those of the so-called Columbian Spirits.

4. The results of the study are all the more significant because the animals used in connection with it (rabbits) probably are more resistant than any other to the effects of wood alcohol, owing to the rapid oxidation of the poison.

5. As in ingestion, so also in inhalation the real cause of the toxic effects of wood alcohol lies not in the toxicity of wood alcohol *per se*, but in its slow oxidation to formic acid which is very poisonous, acting as it does both as an acid and, during oxidation, as an aldehyde.

6. The danger to workers in industries in which they are exposed to the inhalation of wood alcohol—no matter in what form—may be partially, and only partially, obviated by

a most thorough ventilation; the most important consideration being allowed for each worker much more space than is usually alloted, in order to diminish the concentration of the vapor of wood alcohol.

7. The workers should be warned of the danger of the exposure.

8. Perfect health, *i. e.* perfect oxidation processes, is the best protection against the danger of the inhalation of wood alcohol, and whatever interferes with it (poor nutrition, loss of sleep, alcoholism) makes the individual all the more vulnerable.

Literature.

(1) Eulenberg, Lehrbuch der Gewerbehygiene, Berlin, 1876.

(2) Poincaré, Comptes Rendus de l'Academie des Sciences, Paris, 1878, p. 622.

(3) Tyson and Schoenberg, Journ. of the Amer. Med. Ass'n, 1914, LXIII, p. 915.

(4) Loewy and Heide, Biochemische Zeitschrift, 1914, LXV, p. 230.

(5) Mueller, Zeitschrift fuer Angewandte Chemie, 1910, I, p. 350.

(6) Harnack, Korrespondenzblatt fuer Schweiz. Aerzte, 1912, No. 5.

(7) Fuehner, Biochemische Zeitschrift, 1905, III, Abstr. No. 902.

(8) Pohl, Arch. f. experiment. Pathol. u Pharmakol., 1893, XXXI, p. 381.

(9) Placet, These de Paris, 1912, No. 35.

In Memoriam.

I have been denied the greatest pleasure a pupil is to know—to thank his teacher for the inspiration, encouragement and sympathy.

General G. M. Sternberg, Surgeon-General U. S. Army, Ret., under whose direction the work was done, has now been dead over a year, and it is but in revering his memory that I can do homage to the splendid man and the great scientist that he was.

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PRELIMINARY REPORT OF COMMITTEE ON THE STANDARDIZATION OF THE WORK OF PUBLIC HEALTH OFFICIALS.

Presented before the Public Health Administration Section of the American Public Health Association in Convention at Cincinnati, Ohio, October 24, 1916.

IN THE appointment of this committee, the Rochester convention of the American Public Health Association in 1915 expressed itself in favor of some thought or study relative to the standardization of the work of public health officials. The convention in session voiced the complaint that the public health official who endeavors to make comparisons of work and records of health departments in this country finds that the greatest single need is probably standardization. In other words, there appears to be no standard of measurement.

The public health official already realizes that such standardization will promote a unification of thought and action which will make it possible for him to devise ways and means of fairly competing in the field of public health endeavor.

Business efficiency is nothing more nor less than the application of standardization of business methods to the work to be performed. Wideawake

and businesslike administrations have been striving for a local standardization for some years past. The federal government has applied it in the writing and enforcement of laws pertaining to interstate affairs, and it is possible that the federal government may be an agent through which the reorganization of state and municipal health departments can be effected, in order to give the health officer the standard he seeks.

Of course, there has been some attempt made to standardize things pertaining to public health and the action of public health officials, but until an earnest and concerted effort is made to secure the coöperation of all the larger cities, a sporadic attempt at some uniform method is of but little avail. The AMERICAN JOURNAL OF PUBLIC HEALTH in its issue of June, 1913, contained the report of the Committee on Uniform Health Reports of the Massachusetts Board of Health, which was a very comprehensive and commendable outline for the reporting of departmental work, and contained much data that will be of use to this committee. With this exception, the subject has been treated in the abstract only, and during recent years there has come a thorough realization of the lack of a standard, with a visualization of the drawbacks entailed in the effort to make proper comparisons of health rates, death-rates and the progress of public health departments.

Inevitably, it occurs to one's mind the need of greater uniformity in the annual reports of health departments. It is utterly impossible at the present time to make comparisons of any value whatsoever from nine-tenths of the reports one receives.

To the experienced health official, comparisons of appropriations given by municipal legislatures for health work mean nothing unless the statement or report be accompanied by complete information relative to the organization of and functions performed by the health department of that particular city.

The first question which naturally arises is: "What functions are assumed or controlled by the health officer in charge of a health department?" Do they include the care of the indigent and feeble-minded and insane, as well as the complete control over the institutions of correction? Do they include medical inspection in relation to contagious diseases, and medical inspection of school children, to say nothing of the functions assumed by the various sub-divisions of these bureaus or departments? Do they also include control of street cleaning, garbage and waste disposal? Do they include appropriations made for housing betterment or plumbing regulation? Do such appropriations include jurisdiction over municipal baths, comfort stations and lodging houses, and in the broad field of sanitation, do they include with other things, the building and maintenance of municipal reduction and waste disposal plants?

With the work given to the public health official, there should unquestionably be a proper and equitable basis of comparison, in relation to appropriations given, and there should also be a standard distribution of functions to be performed. There can

be no standard methods of comparison of rates between health departments that on one hand assume control of street cleaning, garbage and waste disposal, with the health department of a city which assigns these sanitary engineering tasks to another municipal department.

It is the thought of this committee to recommend several forms for departmental work,—one for state boards of health which can be uniform for all states, and others for cities of different sizes, as well as one for small towns. In the larger cities where the laboratory facilities are ample, where adequate food inspection systems may be carried out and where many lines of endeavor are possible that are not so in smaller communities, a much higher standard could be attempted than would be possible in small communities.

In the history of the early days of public health work in the United States, there was a disposition to standardize the work of health officials in the appointment of boards of health. Legislative phraseology may have differed in the final enactment of laws by the various states, nevertheless the one supreme thought presented was that a board of health had absolute control over those things which pertained to health matters. In the preservation of the principle of states' rights, there no doubt went with it the enactment of laws suitable to different localities, and this perhaps was the cause of a diversion from the standard originally laid down.

Very often a public health official in visiting neighboring cities confesses to be astonished in learning of the rules and regulations governing certain classes of public health work, and which rules or laws are almost in direct variance with those that have been enacted in the city of which he is the health officer. His astonishment is the more disconcerting because of his absolute faith and belief in his own rules and laws. His embarrassment is better exemplified in cases of counties whose boundaries are separated by an invisible surveyor's line and where all local conditions are more or less the same.

The recent chaos of quarantine regulations all over the country in the outbreak of poliomyelitis is as good an example as we need of the desirability of standardizing the methods of prevention.

In the compilation of data of nine large cities, which is appended hereto, in tabulated form, it is shown clearly that the functions of the several health officers are many and varied. The tabulation is but a preliminary effort and is not presented with any idea of reaching a conclusion but for the purpose of showing that it is of little avail to attempt to compare the work of one health officer with that of another, when comparisons are given in such statistical form.

This committee will endeavor, through the formation of an Advisory Committee, to standardize the work of such branches of a health department as Child Hygiene, Food Inspection, Hospitals (both for the care of contagious and communicable diseases, as well as the care of the indigent), define clearly the work of the medical inspector, to properly place the control of

APPROPRIATION BY FUNCTION OF THE HEALTH DEPARTMENTS OF VARIOUS CITIES.

	Population last Census (U. S. 1910)	Total Appropriation for Health Department or Bureau	Executive	Medical Inspection	Child Hygiene	Laboratory	Vital Statistics	Sanitation	Tenement House Inspection	Plumbing	Food Inspection	Hospitals, Contagious	Hospitals, Indigent	Garbage Collection	Baths, Comfort Stations, Lodging Houses
		$	$	$	$	$	$	$	$	$	$	$	$	$	$
New York (*A*)	4,766,883	3,358,343.60	*a*271,392.00	*b*522,230.00	664,305.00	*c*208,698.00	68,677.00	248,319.00	Tenement House Dept.	Bur. of Buildings (Borough Gov.)	265,109.00	1,022,445.60	Dept. of Pub. Charities		Dep. Parks Bur. Pub. Bldgs., Dept. Pub. Charities
Chicago (*B*)	2,185,283	*1,600,249.24	49,240.00	348,120.00	*d*14,000.00	38,430.00	33,220.00	172,568.00	Bur. of Sanitary Inspec.	Bur. of Sanitary Inspec.	158,540.00	*e*52,920.00	*e*17,560	*f*230,231.86	*e*54,920.00
Philadelphia (*C*)	1,549,008	444,010.00	14,980.00	114,500.00	51,230.00	25,660.00	12,750.00	95,170.00	Div. of Housing and Sanitation	Div. of Housing and Sanitation	27,770.00	97,750.00	Bur. of Charities	Dept. of Pub. Works	Board of Recreation
St. Louis (*D*)	687,029	†175,434.80	19,616.13	Under Sanitary Div.		15,136.27	3,881.70	124,198.11		Plumbing Dept.	Sanitary Div.	Hospital Dept.	Hospital Dept.	Garbage Dept.	*h*6,827.77
Boston	670,585	‡315,043.21	147,057.16	*i*10,776.29	56,674.59	15,994.99	Registry Dept.	Under Executive		Building Dept.	35,213.35	*j*32,695.90	Hospital Dept.		16,630.93
Baltimore (*E*)	558,485	§264,188.00	13,290.00	*k*48,080.00	9,420.00	16,430.00	5,580.00	*l*3,000.00	3,000.00	25,843.00	38,880.00	*m*83,095.00	Supervisors of City Charities	Street Cleaning Dept.	Free Public Bath Commission
Pittsburgh	533,905	‖624,898.02	20,167.04	*n*149,684.31	Bur. of Infectious Diseases	Bur. of Infectious Diseases	Bur. of Infectious Diseases	351,790.64	Bur. of Sanitation and Plumbg.	Bur. of Sanitation and Plumbg.	61,284.15	41,971.88	Dept. of Charities	Bur. of Sanitation	
Buffalo (*G*)	423,715	238,142.92	43,522.00	31,401.72	55,062.53	20,837.31	2,450.00	28,711.36	Bur. of Sanitation and Tenements.	18,691.58	27,134.78	Separate Dept. Hospitals		Dept. of Public Works	10,331.64
San Francisco (*H*)	416,912	884,942.00	51,131.00	28,220.00		13,920.00	3,000.00	19,620.00	3,000.00	11,100.00	38,580.00	45,708.00	662,663		

(*A*) *New York:* Fly and Mosquito Extermination, $2,916. Public Health Education, $17,707. Supplies, $14,190. Buildings and Grounds, $52,355. (*B*) *Chicago:* Municipal Reduction Plant, $324,340. (*C*) *Philadelphia:* Special appropriations made to coroner, city entomologist, department of supplies, and contagious hospital; $4,200 to Health Officer. (*D*) *St. Louis:* Special Appropriation to coroner and $5,774. Fly and Mosquito Work. (*E*) *Baltimore:* Special appropriation to Street Cleaning Department, $5,420, for morgue. (*G*) *Buffalo:* Municipal Reduction by Board of Public Works. (*H*) 0—$8,000 for Morgue, Autopsies and City Burials.

a. Includes $23,910, audit and accounts. *b*. "Preventable diseases." *c*. "Research and vaccine." *d*. "Infant welfare," child hygiene is a division under medical inspection. *e*. Bureau of hospitals, baths, comfort stations and lodging houses. *f*. "Bureau of waste disposal." *g*. Morals commission. *h*. Comfort stations only, bath houses under park department. *i*. "Disinfection." *j*. Includes $4,510.42 for small-pox hospital and $28,185.48 for quarantine. *k*. "Communicable diseases and nuisances." *l*. Abatement of nuisances. *m*. Includes $28,020 tuberculosis, $22,655 quarantine, and $32,420 Sydenham Hospital. *n*. "Bureau of infectious diseases." *o*. City burials only, morgue and autopsies under coroner.

* Includes $100,100 for miscellaneous services and supplies. † Expenditures for 1913–14. ‡ Expenditures for 1912; appropriations for 1915–16, $360,000 (detailed information for 1915–16 not available). § Includes $12,150 miscellaneous item. ‖ Figures for 1913 only ones available.

plumbing, and to outline the functions of the housing branch and those to be performed by the sanitary officer of the municipality, as well as the many and varied functions now given to health departments.

The work of the standardization of these sub-divisions of a health department is a task not to be undertaken by this committee at the present time. It is respectfully requested that this Association authorize this committee to appoint an Advisory Committee, in order to secure the assistance of the very best men in the country in their various lines—men whose opinions and whose practical work are both such as to carry with their expressions confidence and respect. If such an Advisory Committee were to serve, without doubt much valuable information will be secured in the formation of the final report of your committee.

The State Health Officers of this Association can be of very much help in the standardization of State Health Reports and this, of course, should be the first step in the standardization of the work of public health officials.

The report that would be submitted by this Advisory Committee would also cover the standardization of the work of the public health officer in relation to the various sub-divisions of a health department, and this information could be taken up as official reports of the Association, circulated widely through proper channels, and the officers of the committee directed to secure through individual and repeated appeal their adoption by the various health departments throughout the country.

It is the further desire of this committee that the entire Association be asked to coöperate in this effort to standardize the work of the public health official. Criticisms of this preliminary report are solicited, as well as suggestions and information which may be of any help to the committee. It is the desire of your committee that its continuance be permitted for another year, in order to further the effort to bring about a standardization which is conceded by all to be most essential to the efficiency and good of the public health service.

Respectfully submitted,
GUSTAV F. RUEDIGER, M. D.,
CHARLES E. TERRY, M. D.,
LAWRENCE VEILLER,
JAMES F. MCCRUDDEN, *Chairman*.

Committee on the Standardization of the Work of Public Health Officials: Mr. James F. McCrudden *Chairman*, Philadelphia, Pa.; Dr. J. F. Edwards,* Pittsburgh, Pa.; Dr. Gustav F. Ruediger, La Salle, Ill.; Dr. Charles E. Terry, Jacksonville, Fla.; Mr. Lawrence Veiller, New York, N. Y.

*Dr. Edwards, because of his absence at the front with his regiment, has been unable to concur in this report.

RELATION OF THE PUBLIC HEALTH SERVICE TO PROBLEMS OF INDUSTRIAL HYGIENE.

DR. J. W. KERR,
Assistant Surgeon General, United States Public Health Service.

Read at annual meeting of American Public Health Association, Cincinnati, Ohio, Oct. 24–27, 1916.

IN ORDER to outline properly the relation of the Public Health Service to industrial hygiene, it is necessary, first, to review briefly the growth of this service as a public health agency; second, to define the present-day broader conception of the scope of industrial hygiene; and third, to consider the relative importance of this particular field as compared with the field of sanitation generally.

By successive laws enacted by Congress during the period from 1798 to 1912, the Public Health Service was gradually developed as the federal health agency. While duties occasionally of a diverse character have been imposed upon it from time to time, it became apparent that they were on the whole closely related and were to constitute the general lines of activity in public health matters which the federal government should ultimately follow in increasing degree.

It is significant that the first of these laws, enacted July 16, 1798, founding the service, should have provided for the medical treatment and protection of the health of American seamen—at the time perhaps the most important group of industrial workers of our country. It is significant also that this authorization provided for taxation of the shipping industry in support of such medical and sanitary relief, all vessels of the merchant marine being taxed twenty cents and later forty cents per month for every person employed thereon. While this capitation tax was subsequently repealed and other means of providing funds adopted, it established a precedent for contributions on the part of employers, employees, and the government, in providing sick benefits; it was a health insurance system, in fact if not in name.

This first Act, and in fact all federal laws subsequently enacted in the interest of the public health derived their authority from the clause in the Constitution giving Congress the power to regulate commerce between the several states, foreign nations, and with the Indian tribes. Such commerce in the eighteenth century being confined almost wholly to water transportation, it was natural that the first attempts to exercise this power should relate to navigation and to the protection of the health of those responsible for its safe conduct. The greater exercise of this power in recent years is simply a logical outcome of the development of railroads and the modern interpretation of the term interstate commerce from both judicial and executive standpoints.

By reason of the recurrence or threatened recurrence of epidemics of yellow fever and cholera from 1855 to 1893, the development of sanitary

measures to prevent the introduction of these and other quarantinable diseases and to promote commerce were rapidly advanced. In consequence, in the latter year service duties in general included conduct of maritime quarantine, suppression of epidemics, studies of interstate sanitary regulations, collection of sanitary data and their dissemination, and coöperation with state and local health authorities. Additional important duties included the visual examinations of masters, mates and pilots for color blindness, physical examinations of seamen as to fitness for duty, examinations of arriving aliens as to their physical and mental status, and, to a limited extent, laboratory studies of public health matters.

By an Act of Congress approved August 14, 1912, however, still broader authority was provided for investigations of diseases of man and matters pertaining to the public health. Section 1 of this Act is as follows:

"The Public Health Service may study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage, and the pollution directly or indirectly of the navigable streams and lakes of the United States, and it may from time to time issue information in the form of publications for the use of the public."

It is thus evident that it was the manifest intention of Congress to provide all necessary authority to investigate unhygienic conditions reacting adversely upon the health of man, and to disseminate the information acquired, as well as to suggest measures for their control. In order to discharge these duties and in accordance with specific provisions of law, the Public Health Service has been developed along broad lines.

There are now almost 500 officers located at different points in the United States and throughout foreign countries. On account of the mobility of the corps, not only may these officers gain wide experience in public health matters, but they may be concentrated and transferred to any point or points where insanitary conditions require investigation and control.

The movements of officers and the policies to be followed in respect to public health matters are directed from the central office at Washington, which consists of seven divisions so constituted that they can be readily enlarged to meet the requirements of new duties and new situations.

A field station and laboratory of industrial hygiene are located at Pittsburgh, Pa., and facilities provided for carrying on bacteriological, chemical and physical investigations.

In connection with its other operations, certain activities of the Public Health Service in the past have related to vocational diseases and industrial hygiene, some of which may be mentioned to indicate their scope. For many years, medical and sanitary care has been furnished to American seamen. During the quarter of a century from 1886 to 1910, for instance, 1,332,878 such seamen were thus cared for. Within a period of ten years ending June 30, 1915, there have been examined mentally and physically 11,502,661 aliens, who have

formed an ever increasing army of recruits to the industries. In coöperation with the Bureau of Labor, an investigation of woman and child labor in the cotton mill industry in the United States has been made with special reference to the influence of hookworm disease. In coöperation with other departments, studies have been made of the sanitation of mines and the mining industry in portions of Alabama, Arizona, Colorado, Michigan, Minnesota, Missouri, Montana, and West Virginia. Studies of the sanitation of the steel industry have also been made, including approximately one thousand physical examinations of steel workers, and over six thousand eye examinations of like workers to detect trachoma. Systematic studies of different systems of lighting have been made with special reference to their adaptability for places of employment, the eyes of over one thousand employees of the government alone having been examined as a part of this study. Under an Executive Order of February 28, 1906, sanitary inspections of government buildings in Washington have been systematically carried on, and for the protection of other workers, those suspected of being afflicted with tuberculosis have been specially examined. As a part of this work, special researches have been made of the effects of fumes of cyanide of potash in case hardening processes, of the effects of lead fumes in the printing industry, and special attention has been given to the injurious effects of certain pigments used in the printing process. An extensive series of experiments has been made as to the presence of poisonous gases in certain railway tunnels and their injurious effects upon employees. An investigation of the rag industry in one state was conducted and recommendations made by an officer of the service to the authorities for the control of insanitary conditions in the factories involved. While on detached duty, another officer demonstrated the method of transmission of anthrax by means of biting flies, and as a result of the demonstrated danger of infection of anthrax from dried hides from China, regulation of their importation generally has been provided for. Special studies have been made and data published relating to laws and regulations for factory sanitation with special reference to the prevention of communicable diseases. Systematic studies have been carried on relative to the provisions of the several states for the control of the use of poisons and habit-forming drugs, and a detailed analysis made of all state and territorial laws and regulations relating thereto. A model law for the collection of morbidity reports has been drafted and recommended for adoption to the several states and territories. Among the diseases the reporting of which is contemplated under this proposed law are the following of a vocational nature: arsenic poisoning, brass poisoning, carbon monoxide poisoning, lead poisoning, mercury poisoning, natural gas poisoning, phosphorus poisoning, wood alcohol poisoning, naphtha poisoning, bisulphide of carbon poisoning, dinitrobenzine poisoning, caisson disease, or other disabilities contracted as a re-

sult of the nature of the person's employment.

In addition to the above and under regulations of the department, the Public Health Service is required to make examinations of materials of which matches are made, and, on instructions from the Secretary of the Treasury, to conduct inspections of match factories suspected of using white or yellow phosphorus. Under the Act of July 1, 1902, regular inspections are made of establishments in which are manufactured viruses, serums, and toxins for the cure and prevention of diseases of man. Particular attention has been paid to the sanitation of rural sections, the intensive studies and demonstrations of this subject being the natural outgrowth of the discovery by officers of the service of the relation of hookworm disease to health and industrial efficiency and the relation of the undue prevalence of typhoid fever to insanitary methods of waste disposal. Malaria as a factor in lowering the health of communities and interfering with gainful activities has also been the subject of systematic study and demonstration. In fact, malaria, tuberculosis, and typhoid fever may be regarded from a public health standpoint as the most important of all preventable diseases affecting industry. Not only do they prevail unduly among agricultural workers in many sections, causing the largest economic losses of any diseases, but they react unfavorably on all others who are dependent on these workers for food and other agricultural products.

As examples of the more intensive systematic studies that have been undertaken by the Public Health Service may be mentioned the investigation of the health of garment workers in New York and the hygienic conditions surrounding this industry. This included physical examinations of over 3,000 persons, and detailed studies of the hygiene of illumination in 45 workrooms, the effect upon the atmosphere of workrooms of the use of gas heated irons, the general sanitary conditions of the shops, and the home environment of workers.

Studies of tuberculosis in relation to the industries in Cincinnati comprised inspections of 154 factories representing 38 different industries, physical examinations of 19,932 workers, surveys of 138 families in which tuberculosis prevailed with the view to determining the relation of living and economic conditions to the causation of the disease, and observations as to the influence of climatic conditions, floods, population elements, immigration, overcrowding, and other conditions of industry liable to influence the tuberculosis rate.

During studies of the migration of the tuberculous likewise, special attention was paid to the danger to employees from this source in Arizona, California, Colorado, New Mexico, North Carolina, South Carolina, and Texas.

As an aid to the Massachusetts State Board of Labor and Industries, intensive studies have been made to determine the influence on health of the employment of adolescents in the cotton mill industry, 679 minor children having been examined in this

connection. Like studies of the rubber industry are being undertaken.

An extended investigation of the sanitation of convict camps located in 25 states has been made, and a model camp planned and supervised in coöperation with the Office of Public Roads.

For more than a year, upon request of the Industrial Commission of Wisconsin, comprehensive studies have been made to determine the health conditions surrounding the employment of women in industry in relation to the fixing of maximum hours of labor for this class of the population.

As a part of the general studies of vocational diseases, and in coöperation with the federal Bureau of Standards, special attention is being paid to hazards of the gas industry. Advantage has also been taken of an opportunity to make systematic studies of the chemical industry, and the broad question of health insurance and its relation to the prevention and cure of disease among industrial workers is receiving attention. Finally, detailed studies have been and are being made of the sanitary and industrial conditions in cotton-mill villages in relation to the origin and prevalence of pellagra.

These various activities are the natural results of the increased industrialism in our country and growth of public health administration, and cannot logically be developed independent of the latter, for the health of the individual worker is dependent on many factors, the majority of which are operative outside of places of employment. In consequence, every insanitary condition must be inquired into. For instance, in studies of high death-rate from tuberculosis among workers in particular occupations, inquiries as to fatigue, dust, overcrowding, and other unhygienic conditions in workshops must be supplemented by studies of personal habits and health conditions in the home and in the community. And in studies of pellagra among mill operatives, special investigations of economic and social conditions in cross section and for prolonged periods must be made in order to throw light on the origin and prevalence of the disease, and adverse conditions, such as impoverished diet overcome, in order to prevent it.

In fact, the scope of industrial hygiene has been so broadened in recent years as to include, in addition to "first aid," "safety first," "physical examinations" and sanitation of workshops, consideration of all the conditions of living and habits of individuals outside of the factory affecting human efficiency. This embraces many functions which it is the special province of health authorities to perform.

In view of the above conception and by reason of precedents already set, it is pertinent to inquire as to the functions of the Public Health Service in this field. In doing so, however, it is necessary to bear in mind that the authority of the federal government extends only over foreign intercourse, interstate intercourse (when it chooses to exercise it), federal territory and federal administrative affairs, and furthermore, that investigation and research are inherent duties of all sovereign powers.

The functions referred to may be enumerated in part as follows:

1. Supervision of the sanitation of vessels and health of crews engaged in foreign commerce.

2. Sanitary and medical inspection of arriving aliens, *i. e.*, exotic recruits in industry.

3. Supervision of the sanitation of vessels and trains and health of crews engaged in interstate commerce.

4. Inspections of government workshops, examination of government employees on request, and administration of preventive inoculations to such employees.

5. Collection of data in relation to the occurrence of occupational diseases and the causes giving rise to their continuance.

6. Investigations of diseases generally in relation to industrial environment.

7. Investigations of industries with a view to devising minimum standards of sanitary requirement.

Under existing sanitary laws, the following activities may be continued:

(1) Furnishing first aid instruction and appliances for the use of American seamen engaged in foreign and interstate commerce; (2) Inspection and disinfection of living quarters of crews in which cases of tuberculosis have occurred; (3) Physical examinations of seamen to determine their fitness for duty; (4) Examinations of recruits for life saving, light house and revenue cutter duty; (5) Furnishing medical and sanitary care to seamen, lighthouse keepers, and life saving crews; (6) Examinations of arriving aliens to determine their physical and mental fitness to engage in industry, and recording data that will throw light on the question of physical standards in relation to different classes of employment; (7) Prescribing measures for the sanitation of trains and premises of common carriers engaged in interstate traffic and inspections of such trains and premises; (8) Inspections of government buildings and workshops; (9) Physical examination of government employees on request; (10) Vaccination of government employees against smallpox and typhoid fever; (11) Inspections of biologic establishments; (12) Inspections of match factories using white or yellow phosphorus; (13) Investigation of problems of industries in relation to health; (14) Dissemination of information bearing on industrial hygiene; (15) Advising other governmental agencies in respect to hygienic standards for use in industries; (16) Suggesting methods by which workers may become more healthy and efficient, and thus overcome labor shortage.

It would be unprofitable to attempt to enumerate all the problems that await solution. As previously stated, some are now subjects of investigation, but a beginning has just been made. Recent studies emphasize this fact and that new fields are opening up. In the case of pellagra, for instance, it has been found necessary to study intensively the whole industrial environment of affected communities to throw light on the cause of the disease, as economic and social conditions are suspected of being important predisposing factors.

It cannot be denied that large numbers of workmen have not had the opportunity of enjoying even in reasonable degree healthful living and working conditions. This has not only encouraged inefficiency and labor shortage, but has caused disease and threatened the public welfare. In consequence, it is to the interest of the employee, the employer and the public to correct these conditions; a common ground has been found upon which all may meet in mutual agreement. By means of investigations and wise counsel in respect to industrial hygiene, the Public Health Service may contribute toward this better understanding and thus indirectly improve labor conditions generally—this depending of course on the spirit of impartiality displayed in approaching these vital problems.

EYE CONDITIONS SHOWN IN MEDICAL INSPECTION OF SCHOOLS.

Wm. H. Peters,
Chief Medical Inspector, Department of Health, Cincinnati, Ohio.

R. B. Irwin,
Supervisor of Schools for the Blind.

IN ANY program for sight saving and the prevention of blindness it is essential that provision should be made for comprehensive school medical examination.

Under the old plan, many of the children with impaired vision, got through the schools with few resulting bad effects; some were excused from the operation of compulsory attendance; others remained in school using their eyes until they were finally forced into schools for the blind; still others managed to get through school with a progressive eye lesion which enabled them to qualify in middle life as recipients for material relief.

With a competent and adequate corps of school physicians and the coöperation of our oculists we should be able to detect at an early age, errors in refraction and diseases of the eyes which interfere with school progress, which if left uncorrected and untreated may lead to serious impairment of vision, blindness and subsequent dependency.

We must not be satisfied with the mere detection of visual defects among school children. We must have a careful follow-up system which means the employment of tactful school nurses who will see that the recommendations of the doctors are carried out. It is not always an easy matter to convince a parent and it often requires a great deal of time before we see the final result. During the last three years, 4,772 children attending public and parochial schools in Cincinnati, were discovered with defective vision. Two thousand, six hundred and ten of these children or 55 per cent. were benefited by glasses.

It must be evident to those of us who are engaged in the health promotion of school children, that there are many children attending schools who are classified as "partially blind" and "partially sighted" and they constitute an essentially different group heretofore unrecognized and deserving of special training apart from the blind.

The presence of partially seeing children in schools for the blind offers many serious problems.

The traditional method of approach to the blind is through the fingers. So theoretically, the seeing children must either drop out of these schools or conform to the recognized procedure employed in training those without sight.

This is manifestly unfair, for either horn of the dilemma leads to dependency.

In the spring of 1913 the Board of Education in Boston organized a special class for partially blind children. A few months later the city of Cleveland opened a similar class.

Coöperating with Professor R. B. Irwin, Supervisor of classes for the blind in the public schools of Cleveland and Cincinnati, three conservation classes were organized in our city for the benefit of children who had such marked impairment of vision that they could not keep pace with the pupils in regular classes.

The primary object of our classes is to teach the pupils as seeing children and to rescue them from a life of blindness and dependency.

For the purpose of such classes a schoolroom should be selected which has as nearly as possible ideal lighting conditions. In such classes the kind of work which each child is required to do and the method of doing it must be adapted to his peculiar eye condition.

The department of education should place in charge of such classes, teachers who are sympathetic and especially interested in the development of these children who require extraordinary assistance.

Here in our city we are trying to conserve what vision remains, and to promote the general health of the children.

Standards for admission proposed by a local committee of oculists were adopted in May, 1915, following a conference arranged by the Chief Medical Inspector.

General rules have been published for the guidance of teachers and nurses, and in order that they might better understand the handicaps of their pupils, one of our local oculists gave a special course of lectures for the teachers, and normal school girls in training, on the anatomy and physiology of the eye, fundamental principles in optics, and the various eye conditions on account of which the children are in conservation of vision classes. The teachers were enthusiastic and attended regularly. There is no doubt but that they got a good bit out of the practical talks and demonstrations. This year we will give them something a little more advanced.

Forty-six children have been recommended for conservation classes since May 15, 1915, with the following diagnoses:

Myopia	4
Hyperopia	2
Amblyopia	7
Interstitial keratitis	5
Maculae of cornea	3
Corneal opacities	2
Leucoma centralis	1
Congenital cataracts	6
Choroiditis	5
Retinitis	3
Optic atrophy	4
Sympathetic ophthalmia	1
Gonorrheal ophthalmia	1
Trachoma	1
Albino	1
	46

At the present writing twenty-nine of these children are in school; three have been returned to regular classes; one was transferred to the school for the blind; two were granted work certificates and four were placed in the school for mentally deficient children; leaving seven on an eligible list. For various reasons the parents can not see the wisdom of sending children in the last group to special classes.

The Ohio statute provides a state subsidy to day schools for children who can not by reason of defective vision, keep pace with their classmates or if by doing the amount of close work they run a risk of losing their eyesight.

"Any community which fails to make proper provision for children with defective vision must later on pay the price a hundredfold for the economic loss of her citizens."

SOME DIFFERENTIAL REACTIONS OF COLI-LIKE BACTERIA.

PROF. MAX LEVINE,
Ames, Iowa.

FOR some time it has been the aim of water bacteriologists to find some reaction which would serve to differentiate coli-like organisms from different sources, particularly animal sources. The significance of such a differentiation is self evident. It would not only set aside the most serious objection to the colon test, but actually strengthen it. With this object in view, numerous studies have been made in which attention was focused particularly upon the ability of the organisms to form acid and gas from various fermentable substances, but it is only recently that these products have been quantitatively determined and other end products of fermentation studied. As a result of these recent observations, it appears that there are two distinct groups of coli-like bacteria which differ in the way they utilize or decompose carbohydrates and which are characteristically found in different habitats.

The end products of glucose fermentation have been most carefully studied. Considering the formation of free acid, gas, acetyl-methyl-carbinol (the Voges-Proskauer reaction), and aldehydes from glucose, the following differences are noted:

One group gives a distinct acid reaction with methyl-red; yields H_2 and CO_2 in approximately equal volumes; does not form acetyl-methyl-carbinol (Voges-Proskauer reaction negative); but does give rise to substances which give a positive fuchsine aldehyde reaction in 0.5% glucose-peptone-dipotassium phosphate solution. The other group is alkaline to methyl red; yields two or more times as much CO_2 as H_2 by volume; forms acetyl-methyl-carbinol (Voges-Proskauer reaction positive); and the fuchsine aldehyde reaction is negative.

The first group (methyl red positive or V-P neg) is commonly found in animal feces and sewage, and not infrequently in cultivated soils. This may be considered as the true *coli group*. The other group (methyl red negative or V. P. positive) is rarely present in human or animal feces, occasionally found in sewage, quite commonly in milk, and constitutes the prevailing type on grains and in the soil. This may be regarded as the *aerogenes cloacae group*.

B. aerogenes and *B. cloacae* have been recognized as quite closely related forms by many investigators. Aside from gelatin liquefaction they are differentiated by MacConkey on motility, and by Kligler on glycerol fermentation, while Durham describes *B. aerogenes* as a starch fermenter. It is therefore interesting to note that from a statistical study of 132 V. P. positive organisms isolated from soil, these reactions (gelatin liquefaction, motility, and fermentation of glycerol and starch), are very strikingly correlated. Considering the non-motile forms, of which there were 44, as *B. aerogenes* only 4.8 per cent. liquefied gelatin, and gas is formed by 97.6 per cent. from glycerol and starch. The 88 motile strains or *B. cloacae*, on the other hand, almost always liquefy gelatin, 91.6 per cent.; while gas is formed from glycerol by only 9.6 per cent. and from starch by 4.8 per cent.

The subdivision of the *Aerogenes-cloacae group* is therefore simple and quite distinct. Subdivision of the true coli group is a much more complex matter. From a study of the coefficients of correlation of each character recorded with all other reactions, it is possible to pick out a reaction which correlates best with the largest number of other characters. This process may be repeated upon the subgroups, if desired, until no further subdivision upon correlated characters is possible.

A study of 162 V. P. negative or true coli strains, indicates that, on the basis of correlation of characters, there is very little choice between sucrose and dulcitol for the primary division. Sucrose was selected because it is more commonly accepted by bacteriologists and incidentally for the cultures studied, it is better correlated with habitat. In the sucrose positive group motility, determined in semi-solid agar, was best correlated with other characters. Subdivision was therefore made upon motility.

This gives a sucrose positive, motile species *B. communior* and a sucrose positive non-motile group which may be further divided into the species *B. neapolitanus* which gives gas from salicin, and *B. coscoroba* which does not form gas from this glucoside. Possibly these two organisms should be included in a single species as *B. neapolitanus*.

In the sucrose negative group gas from salicin is the best correlated reaction, and subdivision could be logically carried further if desired. The sucrose negative salicin positive subgroup is the species *B. coli* of which there are two varieties, the motile *B. coli communis* and the non-motile *B. coli immobilis*. The sucrose negative salicin negative subgroup may be further differentiated upon motiliy into the non-motile *B. acidi-lactici* and the motile *B. Grunthal*. These last two organisms may perhaps best be included in one species as *B. acidi-lactici*.

The practical value of the subdivisions in the *coli* group is at present problematical but differentiation between the *coli* and the *aerogenes cloacae* groups is certainly of some significance.

The most important tests for differentiation of lactose fermenting coli-like organisms are the methyl red, Voges Proskauer, or possibly the fuchsine aldehyde reactions, motility in semi-solid agar, and gas from sucrose, starch, glycerol and salicin.

FALLACIES IN THE INVESTIGATION OF WATER SUPPLIES.

H. A. Whittaker,
Director, Division of Sanitation, Minnesota State Board of Health.

FOR many years laboratory workers have been developing analytical methods for the detection of pollution in water and these investigations have resulted in the establishment of standard methods for this purpose. It is a well known fact that these methods, when properly applied, form an important part of a routine water supply investigation. It is also recognized that a thorough field survey is absolutely essential before a reliable opinion can be offered regarding the safety of a supply for drinking purposes. Unfortunately certain health departments have been depending largely on an analysis of the water, without obtaining first-hand information regarding the environmental, structural and operative features of the water supply. A common practice is to leave the field work to untrained individuals in the local communities. Data sheets and sampling equipment are often furnished to local authorities and private citizens, who collect the field data and water samples on which the safety of a water supply is determined. There are several points in connection with this practice that are dangerous to public safety. By this method, the field survey, which is one of the most essential parts of the investigation, is placed in the hands of an untrained observer who is often incompetent to undertake the work. This same unskilled individual is entrusted with the duty of securing samples of water that must be properly collected if satisfactory analytical results are to be obtained. These samples are then shipped to the laboratory and subjected to most careful examination by skilled technicians when there is no assurance of the accuracy of their collection. This method makes it necessary for the skilled worker to accept facts from an untrained person on the fundamental features of an investigation on which the safety of a water supply is to be judged.

This practice is often the result of a desire on the part of health departments to extend their services to the public, without considering the dangers associated with this method. Frequently, these departments are short of funds to carry on field surveys and this method is provided as a substitute for more thorough work. After the public is educated to such procedure, it becomes very difficult to refuse the examination of samples collected by anyone and from every conceivable source.

In 1903, the Minnesota State Board of Health recognized the fallacy of attempting to investi-

gate water supplies by this method, and since that time has required that the field and laboratory work in connection with these investigations be undertaken by trained representatives of the Board.

In order to show the importance of field surveys and the error which may attend incomplete investigation work, the following table has been prepared from the results of four years' work on water supply investigations in this state.

WATER SUPPLY INVESTIGATIONS, 1912–1916.

Investigations	Results				
	Total		Unsatisfactory		
	Satisfactory	Unsatisfactory	Field and analytical	Field	Analytical
Number 569	225	344	180	136	28
Per cent. 100	40	60	52	40	8

The 569 investigations represent both surface and underground water supplies from a variety of sources, including wells (dug, bored, drilled, driven), springs, lakes, rivers, creeks, etc. The need for water supply investigations in this state is shown by the fact that 344, or 60 per cent. of the supplies examined, were found to be unsatisfactory in their existing condition. An analysis of the results on these unsatisfactory supplies brings out the fact that 180, or 52 per cent., were shown to be unsafe by both the field survey and analytical results; 136, or 40 per cent., by the field investigation alone, while the analytical results on the date of the investigation were satisfactory; and 28, or 8 per cent., by the analytical results alone, where the field investigation did not show the possibilities of pollution at that time, and further investigation was required. These results show that the field survey was corroborated by the analytical results in 52 per cent. of the cases; that the field survey was the only index of danger in 40 per cent.; and the analytical results the only index in 8 per cent.

These results bring out very forcibly the importance of thorough field work, for had the analytical results been accepted as the only index, 40 per cent. of the unsatisfactory supplies would have been approved. It is also true that had the analytical work been omitted, 8 per cent. of the unsatisfactory supplies would have been overlooked. It is evident from these results that both a field and analytical investigation should be made before an opinion is given as to the safety of a water supply from a sanitary point of view. The field survey should give an accurate idea of the possibilities of present and future pollution, while the analytical results should provide information on the sanitary condition of the water at the particular time the investigation is made, and may furnish some information on the past history of the water. The field survey and analytical results together should afford information on which recommendations can be made for the protection or abandonment of the supply.

It should be thoroughly appreciated that the use of any method in the investigation of water supplies which provides for the collection of haphazard information by untrained individuals is a dangerous practice. Judging from the published material of various health departments, there appears to be little uniformity as to the collection of data on which opinions are offered regarding the safety of water supplies. It would seem that a comprehensive survey of the methods of all state departments, at least, would be desirable at this time. These data would provide information on which recommendations could be made with the view of unifying the irregular procedures now in use. It is appreciated that a variety of conditions attend the work of public health departments in different sections of the country, but a standard procedure could be outlined toward which all could work.

THE NECESSITY OF GRAPHIC ILLUSTRATION OF SANITARY CONDITIONS IN A COMMUNITY.

M. R. Mobley, M. D.,
Health Officer, Florence, South Carolina.

I ASSUMED charge of the health department of Florence, South Carolina, during the latter part of July, 1916, just after the memorable storm of that month, during which time there were twenty-three and one quarter inches of rainfall within a period of thirty-six hours.

As a result of this great amount of rain, with the accompanying wind storm, the city was left in an extremely unsanitary condition. Owing to the lack of a complete underground system of drainage, water stood in all the low places, on the streets, in cellars, and in thousands of tin cans, tubs, and buckets. The ground was so saturated with water that there was practically little drainage through the soil. This stagnant water afforded a breeding place for countless numbers of mosquitoes; with the resulting danger of malaria from this source.

At this time only about forty per cent. of the population of Florence were using city water, although city water was available to approximately sixty-five per cent. of the total population. Practically all the wells in the city were filled with water to the surface of the ground, and in a great many instances the wells were overflowing. A test of the well water for gas forming bacillæ was not necessary, as you could see gas bubbles rising to the surface of the water. Through surface drainage the wells became reservoirs of all the filth on the premises; thereby increasing the danger of typhoid, dysentery, cholera-infantum, and other water borne diseases.

A number of our sanitary surface closets were in an extremely unsanitary condition, some were without cans, and in some instances actual soil pollution was being carried on, thereby doubly increasing the danger from drinking surface water.

In North Florence, the main negro district, where there is no system of sewers, or underground drainage, the stagnant water was so deep in some places, that the negro residents had to wade to their homes.

This stagnant water, together with decaying organic matter, produced numerous disagreeable odors.

At a glance, one would naturally see that the conditions which I have described above needed an immediate remedy in order to prevent the occurrence of an epidemic of some contagious disease. City council immediately appropriated sufficient funds to place city water for drinking purposes within reach of practically the entire population. Over each spigot was placed a placard, bearing a warning against drinking well or pump water. In this manner we eliminated the largest single factor that might be productive of an epidemic.

We secured an oil wagon, and several barrels of unslaked lime, and made a house to house canvas of the entire city, oiling all wells, stagnant pools, ditches, in fact any body of water. All tin cans or buckets that could hold water were turned over. All low lying places were limed thoroughly. In each instance we gave the owner of the premises explicit instructions as to how to keep their places in a sanitary condition.

All of the city departments coöperated in trying to relieve the distressing conditions at the earliest possible moment; the street department facilitated the work greatly by draining off all stagnant pools where it was possible to do so.

At this time the department had no record of conditions from which we could plan a satisfactory method of operation. There was no complete record of the number, location and condition of surface toilets; thus leaving us at a loss as to where to expect the greatest degree of danger. We had no record of existing sanitary closets where the property owners had failed to install the sanitary closets as prescribed by law.

We had no knowledge of the number, location, or condition of wells, pumps, or stables.

Our record of existing contagious diseases was incomplete.

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Our record of existing contagious diseases was incomplete.

A study of the foregoing conditions, with a complete lack of records, made it evident that

we would have to make a sanitary survey of the entire city, covering the following points:

General.—Date; street; owner; occupant; race; children of school age, M. and F.; boarders or roomers; other occupants.

Contagious Diseases.—Typhoid; infantile paralysis; small-pox; diphtheria; measles; pneumonia; tuberculosis; pellagra; meningitis; scarlet fever; whooping-cough.

Environment.—Water supply; city water available; kitchen sop disposal; sewer connections; sewerage available; horses; cows; stables, distance from house; surface closet, distance from house; yard, drainage; milk supply.

Remarks.

The survey had to be completed, and records tabulated before we could plan a satisfactory method of procedure.

A recapitulation of the survey shows the following:

White population, 4,991
Colored population, 4,115
Total population, 9,106
White children of school age, 1,077
Colored children of school age, 976
Wells, 508
Pumps, 288
Horses, 322
Cows, 148
Stables, 382
Surface closets, 1,441
Wells and pumps where city water is available, 209
Surface closets where sewerage is available, 450.

Such a large number of surface wells and closets must constitute an ever ready source of grave danger. Our survey showed 209 surface wells and 450 surface closets were being maintained where city water and sewerage were available. Using red pins we denoted on a map of the city the location of each surface closet within the city. This map graphically illustrates the number and location of surface closets in any portion of the city. When we succeed in having the use of a surface closet discontinued by the installation of sewerage, we denote the same by removing a red pin and inserting in its place a white pin. It is my purpose at a later date to denote the location of surface wells in the city by using a map with different colored pins.

The survey enabled us to locate all stables in the city. This information will be of great value in the spring when we begin our active campaign against the fly, by assisting us to readily inspect all stables, and instruct property owners as to their proper care.

With the above information, and with the coöperation of the physicians, we have obtained a complete record of all contagious diseases existing within the city. Upon the reporting of a new case of any contagious disease, we denote the location of the same by inserting a specifically colored pin in the map of contagious diseases of the city. We denote the location of recovered cases by the use of ring pins of the same color.

By a comparison of the map of contagious diseases and the map of closets and wells, we can see the general conditions surrounding the contagious disease in question, and can properly instruct the surrounding community as to the best method of protection.

It is especially gratifying to the health department to be able to report that since the occurrence of the storm we have had only seven cases of typhoid fever, originating within the city, practically all of which have been in those areas where surface closets and wells are most numerous.

Book Reviews.

Preventive Medicine. *Edited by Wm. A. Evans, M. S., M. D., LL. D., Ph. D., Professor of Preventive Medicine, Northwestern University Medical School. Vol. VII of the Practical Medicine Series, 1916. The Year Book Publishers, 327 La Salle Street, Chicago. 380 pp. Cloth, $1.50. Series of 10 vols., $10.00.*

This handy little volume contains within less than 150 pages of clear type and good paper the most comprehensive and most helpful survey we have seen of the year's progressive preventive medicine. It is a digest of the utmost value, consisting of summaries of the more important activities and publications of the year, seasoned now and then with those crisp and satisfactory editorial comments which Doctor Evans so well knows how to introduce. The distinguished president of the American Public Health Association here shows himself at his best as he ranges rapidly, yet thoroughly, over the vast field of preventive medicine pointing out to us here an important new movement, there a fresh discovery, and beyond a helpful piece of original work. We follow him with amazement and with pleasure; amazement, at the rapid and extensive growth of the field; pleasure at its performance and its promise.

The text is readable, and rich in information. Charts and tables, statistics and references to literature, are abundant but not superabundant, while one good index of subjects and another of authors, fit the volume for quick and easy reference.

In these days of extreme specialization and differentiation, integrating digests like Doctor Evans' are indispensable. It is rarely that an editor can be found for this all-important work having even a fraction of the wide experience, vast information, digestive capacity, good judgment and editorial ability, of the president of the American Public Health Association. It is a pleasure, therefore, to commend in the highest terms the public service which Doctor Evans has performed in the preparation and publication of this survey of one year's progress in preventive medicine and public health science.

W. T. Sedgwick.

A Monograph on the Epidemic of Poliomyelitis in New York City in 1916. *New York: Department of Health. 1917. Quarto, 391 pages, including half-tones, charts, maps and tables. Price, $1.50 postpaid.*

This interesting report opens with a detailed historical description of the beginning of the 1916 epidemic of poliomyelitis in New York City, tracing its progress and enumerating the steps and measures taken in marshaling the forces of the department of health in the attempt to prevent the disease from spreading, when the seriousness of the situation was apparent.

An investigation by the department after June 6, on which date two cases of poliomyelitis had been reported, disclosed the fact that there were in reality twenty-nine cases in the section of Brooklyn at the time these two cases were reported. Also during May and the first ten days in June, fifteen cases had been reported whereas there were ninety-three cases that had not been reported, showing the prevalence of the disease at the start.

The cost of fighting the epidemic was $317,000, a startling figure, but a guide to go by in fighting other diseases and proving that prevention is the cheaper way.

In reference to the many experiments carried on with monkeys and other animals as to the causative agent of the disease, the report states that, "Notwithstanding their many experiments, full proof is wanting that the minute organism described by Flexner and Noguchi in 1911 is the specific cause of poliomyelitis."

It is interesting to note that no cases occurred on Governor's Island where there were eighty children or on Barren Island where there were 350 children under sixteen years of age. Barren Island has many large rendering plants as the garbage of the city is brought there, and as a result is infested with rats, flies and mosquitoes.

The numerous suggestions as to the cause of the epidemic that were received by the department from the laity and others, furnishes a humorous section to this otherwise serious subject.

The age incidence shows that over 90 per cent. were under 10 years of age. Also, that 599 cases or 10 per cent. of 5,496 cases that were carefully studied, were probably due to contact.

What may prove to be of importance was the

fact that over 81 per cent. of 1,350 children tested for the Schick Test at the Willard Parker Hospital gave a positive result, and the conclusion drawn, "that a susceptibility to one of the less contagious diseases indicates that the child is also more apt to be susceptible to other contagious and infectious diseases."

Multiple cases in the same house, housing conditions, nationality and the relation to other infant diseases are discussed. The comparison of the prevalence of the disease with diphtheria, on the different floors of tenements showed a surprisingly close comparison in view of the question of the spread of the disease by contact.

The conclusion was reached that, "we must, until new information as to carriers and means of transmission is forthcoming, rely upon early diagnosis, prompt notification, hospitalization or equivalent home isolation, a well informed public and an alert medical profession."

The chapter on "Insects as Carriers of Infection" is by Prof. Charles T. Brues, who discusses the possibility of insect transmission from various angles and closes by saying, "Among the unknown factors which cause the greatest confusion in interpreting epidemiological evidence are (1) the length of the period of incubation; (2) the number of mild, abortive or unrecognizable cases and carriers of the virus and their relation to infection and immunity; (3) the duration of infectivity in clinically recognized cases; and (4) positive knowledge of the presence of the infective agent in insects, domestic animals, or other possible intermediate hosts or reservoirs of the virus."

Chapters on pathology, symptomatology, diagnosis, and prognosis will appeal to the practising physician. A series of maps in the appendix shows the progress of the epidemics by month periods in the different boroughs of the city. Many tables of value are given including one of a list of the world epidemics of the disease since 1841.

From a study of the results of the epidemic the reports states, "Two apparently just inferences may be drawn from a study of the records:

"1. That hospitalization, when prompt and applied to all but moribund cases, probably checks the spread of the disease and determines a lower incidence under similar housing conditions than where removal to hospitals is delayed and many cases are left in their homes.

"2. Isolation of groups of children from contact with other children or adults, even when carried out in the midst of areas where the disease is prevalent, suffices to protect such children almost absolutely from infection, in spite of the use of identical water and food supplies, and exposure to the same atmospheric conditions and winged insects."

Altogether it is a very complete and full report of one of the most bewildering epidemics that a health department has had to face in recent years.

Stanley H. Osborne.

The City Milk Supply. *Horatio N. Parker. New York: McGraw-Hill Book Company. 1917. Illustrated. Price, $1.50 net.*

"The City Milk Supply" is the very appropriate title of a new book by Horatio Newton Parker, formerly Health Officer of Montclair, N. J., lately instructor in municipal and sanitary dairying at the University of Illinois, and a member of the International Association of Dairy and Milk Inspectors. The book contains seven chapters in which the author has written of the Principal Facts Regarding Milk (Chapter 1), Diseases Communicable in Milk (Chapter 2), Dairy Cattle on the Dairy Farm (Chapter 3), Sanitary Milk Producing (Chapter 4), Transportation of Milk (Chapter 5), The Milk Contractor or Dealer (Chapter 6), and the Control of Public Milk Supply (Chapter 7).

As a result of the author's wide experience and observation he has been able to combine in the various chapters the latest and most reliable information pertaining to the above subjects. The author has also drawn freely from the work and observations of others, for which he freely gives credit; in fact one of the valued features of the book is the excellent bibliography of the literature reviewed by the author and relating to the production, transportation, reparation and distribution of milk for city consumption. Milk producers, milk dealers, and consumers of milk should be greatly benefited by a careful study of Mr. Parker's work. The dairy investigator and student of

the dairy industry will find in it much of permanent value. The health officer or dairy inspector, on whom rests the responsibility of protecting the public health from milk-borne diseases, will find this timely publication to be a reliable guide. This particularly authoritative volume should be, and doubtless will be, highly appreciated by all who have to deal with the safeguarding and improvement of milk supplies.

Ivan C. Weld.

Health Department Report.

New Haven, Connecticut.

The Annual Report of the Health Department of the City of New Haven, Conn., for 1916 is to be commended for its frank and clean-cut discussion of its community problems, particularly the excellent critical discussion of the Bureau of Communicable Diseases. It is evident that Dr. D. M. Lewis, Director of the Laboratories and of this Bureau, in his report to Doctor Wright, Health Officer, has followed closely the examples set by such men as Chapin, Levy and Terry, and the result is of peculiar interest to all concerned.

New Haven is a city of an estimated population of 160,000. The general death-rate for 1916 was 15.87, but if one excluded from the total number of deaths the 961 deaths which occurred in public institutions there would be a resultant death-rate of 9.86 per 1,000 population. The death-rate per 1,000 from epidemic diseases was 0.74. Respiratory and circulatory diseases were the chief causes of death.

One hundred and sixty-four cases of diphtheria were reported during the year, a reduction from the previous year when 272 were reported. Eighteen nasal carriers were discovered. Four deaths were attributed to this disease. Forty-four cases and five deaths were bacteriologically, clinically, and epidemiologically primarily streptococcal. From a study of these cases it was made evident that: first, diphtheria antitoxin, though given early and in sufficient doses, cannot save lives of septic sore throats; secondly, that associated with the above cases in some families were other manifestations like pneumonia, erysipelas, and septic processes which were from the same preventable source. Streptococcal nasal carriers in the neighborhood of these cases were found "in startling frequency." Of two other deaths charged to diphtheria, one was due to measles, the other to status lymphaticus.

There were 185 cases reported or held as possible scarlet fever cases. Only 77 per cent. of these cases and only one of the four deaths resulting were of patients under fifteen years of age. Since it is stated that 90 per cent. of all cases of true scarlet fever and 90 per cent. of the fatalities are under fifteen years of age, here is another case of faulty diagnosis. It is shown that of these 185 cases, only 84 cases were found to be cases of scarlet fever, resulting in one death; the other cases were either grippe or withdrawn diagnoses. In tracing the 84 real cases one carrier under five years and five carriers over five years of age were found. If this sort of faulty diagnosis really does prevail here, it is likely that the error extends throughout the country, and the incidence of these two diseases is grossly exaggerated.

Two hundred and thirty-five cases of measles were recorded with seven deaths. It is felt that this is a true record. Cases of measles are released only when there is absence of inflammatory signs of nose and mouth. There were 64 cases of typhoid fever reported with 12 deaths. Of these, four cases and four deaths were of non-residents; one case and one death was lobar pneumonia; one case and one death was miliary tuberculosis. This represented a drop from 20 deaths of the previous year, and gave a mortality of .04 per 1,000 inhabitants, a good sanitary index. A sewer and a hopper closet which previously were responsible for numerous cases and eight to nine deaths gave none this year, the closet being locked, the sewer being improved. Other methods of attack have resulted favorably, and plans for the future against bathing in certain localities, against clam-digging, and against privies should pull this rate down still further. Infantile paralysis claimed 22 deaths of residents. Excellent results were accomplished in limiting this devastating

epidemic. It is interesting to note that the comparatively satisfactory results were accomplished at the low expense of less than $2,500, while neighboring Connecticut cities spent from $11,000 to $27,000. There were 79 deaths under one year of age due to diarrheal diseases, or 49 per 100,000 population. This low record is attained, it is believed, by clean, short-hauled fresh milk, without pasteurization. One of the recommendations for this department is that an adequate field force be provided for the systematic controlling of nasal carriers among the careless, unfortunate, and ignorant.

Food inspection has advanced rapidly and satisfactorily, an advance greatly aided by the obvious coöperation of certain proprietors and dealers. A municipal slaughtering house is advocated.

With the rapid growth of this city the problem of the milk supply is becoming more complex, and will necessitate longer hauls for this product, and the supply will have to come from outside the state. At present the 739 dairies supplying New Haven with milk are rigidly inspected and must satisfy the requirements. Notices are served on unsatisfactory dairies and failure to improve conditions thereafter prohibits their selling within the city. Health Officer Wright has frequently put himself on record as opposed to the pasteurization of the city milk supply, but it is of interest to note that due to a serious epidemic of septic sore throat which prevailed in nearby districts this last year, undoubtedly due to milk, he has changed his views so that now he is an ardent believer in pasteurization if properly supervised, though he has no confidence in pasteurization as done for commercial purposes.

Other work by this department has been along the same excellent lines though space does not permit its detailed description; such for instance as the laboratory work, medical inspection of schools, dental clinic, and public health nursing service. All in all it is an excellent report of a vigorous policy, and well justifies New Haven's increased health expenditures during the last five years of from 15 cents to 25 cents per capita.

Public Health Notes.

Are Schoolrooms Drier Than Deserts.—George T. Palmer, Chief of the Investigating Staff of the New York State Commission on Ventilation, inquired into the verity of the statement that the air of schoolrooms in our northern climate during winter weather is drier than the air of deserts, and if relative humidity should be the sole criterion of dryness. Observations were made in selected schoolrooms, some of which were ventilated by means of plenum fans and gravity exhaust ducts, the air being humidified before entering the room. The windows in these rooms were kept closed. The average relative humidity in these rooms, from December 11, 1916 to January 31, 1917 was found to be 25.6 per cent. The average temperature was 68.08° F. and the volume of air entering each room was estimated at 1,100 cubic feet per minute.

The second group of rooms was ventilated by means of open windows and gravity exhaust ducts. The air flue varied from about 200 to 1,100 cubic feet per minute. The average temperature was 67.66° F. and the average relative humidity, 27.7 per cent. In 184 sessions held in the first group of rooms, the teacher complained of dryness, 59 times. In 189 sessions held in the window-ventilated rooms, complaints of dryness were received only on four occasions. The average relative humidity of desert air varies from 23 per cent. to 40 per cent.

The rate at which a body of water or a wet surface gives off water depends on three factors, namely, temperature, relative humidity, and rate of air movement. The author studied the factors effecting the evaporation of water from the living body, from the nose and lungs and the sensation of dryness and its cause. The following conclusions are drawn.

1. Schoolrooms admittedly dry and drying do not appear to be as dangerous to health as deserts.

2. Schoolroom air may and does contain less moisture during much of the winter season, than in desert air.

3. On the basis of their dehydrating power, schoolroom air is not drier than the air of deserts.

4. Schoolrooms, at low relative humidity, but

without excessive, continuous air flow and too great warmth (over 68 F.), do not ordinarily feel uncomfortably dry.

5. Relative humidity by itself is thus a criterion of neither dryness, nor dryingness, nor the sensation of dryness.

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Social Hygiene in War Time.— In the July issue of the *Social Hygiene Bulletin*, Massachusetts Edition, some of the precautions that have been taken to make the army camps and naval stations as free from vice as possible, are outlined. Investigations, coöperation with the various police and municipal authorities throughout the country have been set in motion in order to protect the young men who have entered the service of the government. The most important places where action has been taken are Newport, R. I., El Paso, Forth Worth, and Waco, Texas, St. Louis, Mo., San Francisco, and Plattsburg. The government is determined to reduce all types of disease to a minimum.

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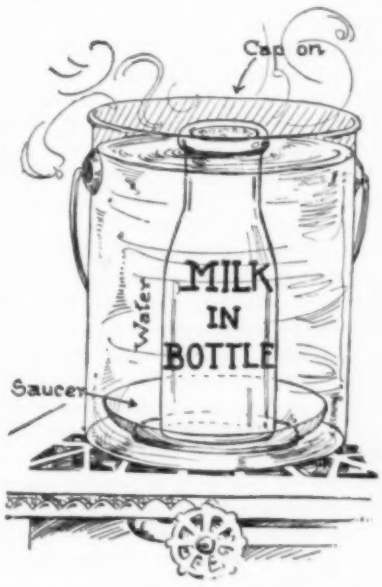
Water Sterilization by Halozone.—*The Mississippi Valley Medical Journal* for August, 1917, tells of the use of halozone for sterilizing water. For this substance and its use in treating water supplies, we are indebted to Dr. H. D. Dahen and Dr. E. K. Dunham. The substance is known chemically as para sulphodichloraminobenzoic acid. Halozone is prepared in tablet form. It is a powerful germicide, more stable than any chlorine preparation now being used for this purpose, and the resultant sterilized water is not unpleasant to the taste. Four milligrams of halozone will sterilize one quart of water. Laboratory tests show that drinking water containing B. coli, and polluted by pathogenic organisms such as B. typhosus, B. paratyphosus A and B, B. choleræ, B. dysenteriæ (Flexner) and (Shiga) and 5 per cent. sewage are made sterile in from 15 to 60 minutes by the use of halozone in concentrations of 1 to 200,000 to 1 to 500,000.

✱

Home Pasteurization.—By courtesy of the Chicago Health Department we are permitted to show a simple device for home pasteurization of milk. The directions follow:

"The milk should be mixed and poured into clean bottles, which should then be stoppered with clean, absorbent cotton. Place the bottles in a kettle filled with cold water to a point a little above the level of the milk; heat the water and allow it to boil for five minutes. Cool rapidly



Simple Device for Pasteurizing Baby's Milk at Home.

and place on ice. If barley water, rice water, or other ingredients are to be added to the milk, this should be done before pasteurizing. After the bottles are prepared they should not be opened until feeding time."

✱

The Care of the Feet.—In the August number of *The Nurse*, Dr. A. W. Herr considers this subject, emphasizing particularly such ailments as flatfoot, cold feet, sweating feet, corns, chilblains and ingrowing toe nails. The arch is very important to the foot, as upon it is sustained the whole weight of the body. The higher the arch, the better the walker and the less the fatigue.

Shoes should of course fit the foot comfortably, and should fit well. Over 10 per cent. of the people suffer from the flatfoot deformity, an ailment which the shoeless man never experiences. Tight shoes or loose shoes should be avoided. Likewise high heels and high shoes. A shoe should not pinch at the heel, and should not

turn up at the toes. Pointed shoes should also be avoided.

It is a good plan never to help a muscle by a brace or bandage. The muscle should be exercised. It will then help itself. Stockings should be long enough to fit the foot comfortably and should be changed frequently. It is well to massage the feet too, and to bathe them often.

Flatfoot is said to be caused by rickets, obesity, general muscular weakness and periods of long standing. The main cause, however, may be laid to tight shoes which interfere with the muscular action and circulation.

Cold feet are also due to tight shoes and are more prevalent among women and girls than among men. Women are more sedentary, their ankles are generally poorly protected and they wear thin-soled shoes. Exercise, alternate hot and cold foot baths before retiring and daily change of stockings are mentioned as remedies.

Sweating feet are usually due to sympathetic disturbances from the stomach. Cloth shoes should be worn as much as possible and such desiccants as alcohol, tannin, alum or salicylated talc may be used. It is also wise to permit a lather of soap to dry on the feet before putting on the stockings.

Corns are always due to improper footwear. The best treatment as a rule is to use a proper shoe.

Chilblains are supposed to be due to diminished blood coagulability.

Ingrowing toe nails should never be cut roundly at the corners. They should be allowed to grow beyond the end of the toe, cut off squarely and kept in that condition.

✠

Sanitary Reserve Bill.—On August 30, the Sanitary Reserve Bill, which was introduced into Congress some months ago by the State and Provincial Boards of Health, and which has already passed the Senate, was finally reported favorably by the House Committee on Interstate and Foreign Commerce in whose hands it lay. It is expected that the bill will soon pass the House.

The bill is somewhat changed but retains the important original provisions. The bill, a modification of Senate Joint Resolution 63, provides for a Reserve Corps of the United States Public Health Service to be composed of officers of state, county, and municipal health organizations, and other persons skilled in sanitary science. Appointments are made by the President upon the recommendation of the Surgeon General. The commissions carry the grades of assistant surgeons, past assistant surgeons, or senior surgeons in the Reserve Corps for four years or during the period of the present war.

Sanitary engineers, assistant sanitary engineers, epidemiologists, and assistant epidemiologists may also be commissioned, their respective grades being prescribed by the regulations of the Public Health Service.

The duties of the Reserve Corps are to be performed under instructions of the Surgeon General and shall be directed toward the proper sanitation of ports and places within the United States or within its jurisdiction, including especially places in which industrial and military forces are mobilized.

The United States Public Health Service is to coöperate with state, county, and municipal health organizations with a view to coördinating their activities and making their work effective.

Further progress of the bill will be reported in the October JOURNAL.

✠

Automobile Typhoid.—The *Municipal Journal* for August 9, 1917, speaking editorially on this subject, warns against the increase of typhoid among city dwellers, through their drinking, during automobile tours, water which was polluted. During August, September, October and November, 1916, the typhoid cases in St. Louis totaled 429 as against 162 for the same period of years previous. Upon investigation it was found many of these cases of typhoid were among those who had motored out to the country immediately surrounding the city, and who had drunk of wells and springs, subsequently found to be polluted.

✠

Ohio Changes Health Organization.—The Ohio State Board of Health has been abolished and a State Department of Health substituted. James E. Bauman is Acting Executive Officer. A State Commissioner of Health and four members of the Public Health Council are to be appointed.—*Ohio Public Health Journal.*

Public Health Clippings.

An Old Health Certificate.

Boston, August ye 13 1776

These certify that Eabenesor Stimpson has been so smoak'd and cleansed as that in our Opinion he may be permitted to pass into the country without Danger of communicating the Small-Pox to any one.

(SGD) JOHN SCOLLAY
NATHL. APPLETON
Selectmen of Boston

(*Copy of original in Boston Medical Library.*)

Disgusting, But True.

"If saliva stained things blue, what a blue world this would be. . . . In fact, it would be a study in blue. Door knobs, handles, street car straps, window ledges, magazines and books in libraries, doctors' offices, and private homes would all have blue covers. There is no limit to the common exchange of saliva!"—New York *Weekly Bulletin.*

Calmette Succeeds Metchnikoff.

Albert Calmette, director of the Pasteur Institute at Lille, is 54 years old. He founded the Pasteur Institute in Indo-China and discovered there a ferment with which alcohol can be extracted from rice, but it was at Lille that he perfected the antivenom serum for snake bites. In the campaign against tuberculosis he was one of the pioneers, his preventorium being one among if not the very first established. He has remained at Lille during the war, but has now been called to Metchnikoff's vacant place in the Pasteur Institute at Paris.—*Jour. A. M. A.*, July 28, 1917.

Alligatorus Sewerensis.

Old Ben King, down at Fort Meade is none of your high-toned engineers but he pulled off a stunt that got his picture into every engineering journal from hither to yon. It was a method of unstopping a sewer. Like Columbus balancing the egg, anybody could do it, but it took Ben King to show 'em how. All he did was to tie a rope to a little alligator, and put him down through the manhole, whereupon the little 'gator threaded his way through to the next manhole, where he was taken out, and then the rope see-sawed back and forth between the manholes—if need be a chain drawn through—till the sewer was clean. That's what Sam Weller would call the "art of inwention."—*Florida Health Notes.*

Signs We Should See—But Don't.

"Poor food store."

"Try our fly specked cakes."

"The dirt in our store cannot be beaten."

"We handle warm and dirty milk."

"Special inducement to children—candies with dust on them."

"Eggs we know are not fresh."

"Milk guaranteed to cause diarrhœa in babies."

"We carry a complete line of noncuring patent medicines."—*Cumberland Bulletin.*

The Worm Turns.

I hereby give notice to the doctors of Canton that from this date my price to them will be 50 cents for each shave and a dollar for each hair cut and that double prices will be charged for all work done after 7 o'clock in the evening, and if it shall be necessary for me to visit them and do work for them while confined in their home for sickness an additional charge of 25 cents per foot for every foot traversed going and coming will be made.—E. P. Arquitt.—From the Canton (New York) *Plaindealer.*—*Lansing Public Health.*

The Passing of the "Certificate of Health."

Here and there in California, physicians are furnishing certificates of health to prostitutes, knowing full well that the statements are for use in soliciting. Just how a self-respecting physician can accept a share of the profits of prostitution and give in return a statement intended to increase the illegal practice is difficult to understand. Within the past few days a part-time health officer told how he gave these certificates, charging two dollars for each

examination. When Doctor X., as private practitioner, discovered a case of active syphilis, did he, as health officer, isolate it and supervise it? No. He had no idea what became of the cases, or to what extent they continued to spread infection broadcast.

In connection with the beginning of the new campaign against venereal disease in one of our cities, several cases of syphilis were reported as coming from one clandestine prostitute. When looked up, she presented a recently-dated card from a local physician, certifying that she was free from all "sectual and venerial" diseases. Examination showed that she was syphilitic. Evidently the complaisant physician was equally thorough in physical examination and in spelling. The physician who issues such cards to prostitutes for use in soliciting, is a partner in their illegal business and a menace to the public health.—*California Monthly Bulletin.*

✻

Have you a fly, a flea, a bedbug or louse,
Living with you in your home or your house?
They are all alike, all nasty, 'tis true,
But it's a slam at your home—a disgrace to you!
—*Buffalo Sanitary Bulletin.*

✻

Patent Medicines.

One can hardly pass a day without being reminded to be "economical" and to "do his bit." All of which we approve, but we add, stop buying worthless patent medicines, thereby saving your health and money.

"A sucker is born every minute." Judging by the amount and large varieties of patent medicines, we think this is a modest estimate.—*Cumberland (Md.) Health Bulletin.*

✻

A Query.

Why will a man submit peacefully to the quarantine restrictions placed upon his child which has been exposed to a contagious disease and "raise the roof" when the order is issued that his dog must be muzzled?—*Connecticut Health Bulletin.*

✻

Doctor:

Do *not* register your baby as a *boy* if it is a *girl*.

Do *not* register your baby as a *girl* if it is a *boy*.

If the *maiden name* of the mother is *Mary Jane Doe*, do not indicate it as *Mary Jane*, omitting the *Doe*.

If the *father's name* ends with *two t's* or *two e's*, do not try to improve his method of spelling by leaving off a *t* or an *e*.

Remember, the *State Law* requires certificates to be in this office ten days after birth.

Unless this matter is heeded by the offenders, we are going *to be forced* to an unpleasant duty.

Doctor, let us agree to *practice reciprocal reception.*—*Spokane Monthly Report.*

✻

Don't procrastinate
But vaccinate.
Otherwise Smallpox
Will get you
If you Don't Watch Out.
—*Chicago Bulletin.*

✻

Poisonous Beans.

The attention of the Department of Health has been directed by the United States Government, to the fact that a variety of bean known as the Burmah White, or Rangoon bean, and laboring under the scientific name of "Phaseolus lunatus," has been sold in large quantities in the United States and Canada.

This bean has been planted by the acre, and in no case has it come up. Furthermore it is poisonous. Analyses of samples taken in Toronto and analyzed in our laboratory show it to contain .028 per cent. prussic acid, and cases are on record, in Holland for example, where people have died from eating it.

The Rangoon bean is a small, yellowish bean, with marked lines radiating from the small eye on the concave surface. These radiating lines and its yellow color serve to distinguish it from the small white bean.

Its importation has been recently stopped by the government as an injurious article of food.

We understand that this variety of bean has not been used by canners to be made into pork and beans, so that there would be no danger to fear from that source.—*Toronto Health Bulletin.*

✻

Bringing up Baby.

In answer to the question as to what we are doing for our baby, we would say that up to date we have fed him on sterilized, unsterilized,

pasteurized, cow's, goat's, condensed, peptonized, and modified milk. We have rocked him to sleep, sung him to sleep, and let him howl himself to sleep. We have dosed him with hot water, peppermint, ipecac, and soothing syrup. We have rubbed him with goose oil, olive oil, and cod-liver oil. We have patted him on the stomach to the tune of "John Brown's Body." We have shaken a rattle before his face for three quarters of an hour. We have given him mental treatment, vibration treatment, and turned red, blue, and green thought on him for hours. We are here to take orders and advice from everybody, and if you have the slightest thing to suggest that we have not already done to that baby, do not tell us—we may forget it. But write it down, and send it along at the earliest possible moment.

Yours respectfully,

THE BABY'S PARENTS.

—*West Virginia Bulletin* from *Life*.

Season of Cosmetics is With Us.

Freckles! scream the headlines of disguised advertisements in scores of newspapers, these days. *Be beautiful*, advise others, at so much per. In addition, one bottle of Punkadora will cure you of fainting spells, leprosy, falling of the hair, cold feet, heart disease, cramps, hangnails, scrofula and warts. If you don't believe it, read the advertisements.

As a wise man said, "You don't have to keep a bee to get stung." Just pay a stiff price for some oriental cream, or magic beautifier.—*Milwaukee Health Bulletin*.

Health Education.

Doctor Hurty, Indiana State Officer of Health, says, "the education of the people is a slow process. But," he adds, "the public education is a surer foundation for public health than lawmaking."—*Louisiana Quarterly Bulletin*.

Industrial Hygiene and Sanitation.

How Digestion Affects Output.—Hurried breakfasts or none at all on the part of employees mean less output from these people in the factory. This is one of the conclusions to be drawn from a report of Professor Kent of the University of Bristol, who was commissioned by the British government to study fatigue. Professor Kent's observations were made on 2,600 men and a large number of women. He found that between 36 and 37 per cent. of the workers examined had trouble with digestion. In several cases workers who produced far below the average were found to be coming to work without breakfast. A change of hours more favorable to a proper allowance for breakfasts increased output 12.4 per cent. Women workers are prone to underfeed themselves because they choose more delicacies to the exclusion of more substantial food.—*Factory*, July, 1917.

A By-Product From First Aid.—You are not making the most of your opportunities if you employ women nurses in the first aid department of your factory, providing most of your employees are men. A doctor would be better. This is the opinion of Dr. Otto P. Geier of the Cincinnati Milling Machine Company. He maintains that if a man comes to the first aid department and has a slight cut dressed by a nurse, he will not be inclined to tell any of his other troubles to her. With a man doctor, however, he will very likely feel perfectly free to speak of ailments which no doubt have been a means of preventing him from doing his best work. A little advice from the doctor may rectify the whole matter.—*Factory*, July, 1917.

Cooling the "First Aid" Room.—Usually after being injured, as the effect of the shock wears away, the workers begun to feel faint. Cool, fresh air aids materially in putting him on his feet. For this reason the "first aid" rooms at the James Manufacturing Company's plant are kept cooler than the remainder of the factory. During the summer months artificial cooling is necessary. The effect was decidedly beneficial. —*Factory*, July, 1917.

The American Museum of Safety has had so many calls, from time to time, for loan exhibits at technical schools, universities, conventions, expositions, and safety rallies of industrial plants, that the Trustees have felt it advisable to prepare traveling exhibits for educational

purposes. The first of these exhibits is an illuminated rack for the display of lantern slides, holding approximately 150 slides. When knocked down, the entire exhibit fits into a neat shipping case, weighing approximately 200 pounds.

✱

Navy Safety Survey.—Mr. C. W. Price, Field Secretary of the National Safety Council, has entire supervision of a safety survey which is being made of the navy yards, arsenals, printing offices and other industries controlled by the federal government. The American Museum of Safety is coöperating in this work through its Director, Mr. A. H. Young, whose services were volunteered to the Standardization Committee of the United States Employees' Compensation Commission, and who has been appointed Safety Expert to take charge of the accident prevention work of the Middle Atlantic District.

✱

Framingham Safety Survey.—Active work on the industrial survey of Framingham, Mass., began May 8. Mr. Young of the American Museum of Safety spoke before an assembly of the manufacturer's, explaining the value of such a survey. The actual investigation of the industrial establishments was conducted by Mr. Albert S. Regula, a member of the staff of the Museum. If possible, monthly meetings of all of the foremen will be held in order to educate them in the essentials of the "Safety First" movement.

✱

Alcohol Causes Wage Loss.—The United States Cast Iron Pipe & Foundary Company recently protested against the relicensing of Burlington, N. Y., saloons on the ground that the average loss of wages on account of drinking has been $180 per man during the last 11 months, and that the total wage loss for the city of Burlington could be conservatively estimated at $100,000 per year at least. The management arrived at those figures through a study of the record of 100 men, 50 of whom were average drinkers and the other 50 total abstainers. Injuries were more frequent among the drinking class.—*Safety Engineering*, July, 1917.

✱

Street Accidents on the Increase.—The number of accidents occurring in the streets of New York City show a decided increase, according to a report recently made public by Police Commissioner Arthur Woods. The report disclosed that the greatest number of accidents happen between noon and 8 o'clock at night. The only notable decrease shown is in horse-drawn traffic. —*Safety*, July-August.

✱

The Second Safety Congress for New York State will be held this year in Syracuse, N. Y., December 3 to 6.

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"Organizing and Conducting Safety Work in Mines," is the title of a richly illustrated bulletin issued by the United States Bureau of Mines. The purpose of the publication is to call attention to some of the means adopted for promoting greater safety in and around mines, in the hope that their presentation will stimulate activity and aid those endeavoring to solve safety problems in the different mining fields. An endeavor has been made to arrange these data in such a way as to present a system for practical application in either large or small mines be they coal or metal.

✱

The Successful Productions of Large Shells.—This article, appearing in the June number of *Industrial Management*, deals with the organization, equipment and management of the American Brake Shoe and Foundry Company at Erie, Pa. This plant has a larger capacity for producing 9.2-inch shells than any other shop in this country. Two British orders for a total of 570,000 large shells have been completed in this establishment. The article is based upon reports prepared by C. D. Pettis, vice-president and works manager of the company.

✱

Americanizing a Thousand Men.—L. D. Burlingam gives a description of a campaign for American citizenship, which was conducted among the alien employees of the Brown & Sharpe Mfg. Co., Providence, R. I. with most gratifying results. Out of 6,000 men, 1,312 were found to be non-citizens. Through methods described in the article, all but 206 have applied for the papers for which they were eligible. In these times of national emergency such a result is of more than passing importance.—*Industrial Management*, June, 1917.

Communication.

To the Editor:

I note in a recent issue of the AMERICAN JOURNAL OF PUBLIC HEALTH, the report of a health survey by Doctor Carol Fox of the United States Public Health Service of South Bend, Indiana.

I do not wish to criticize because I do not know what the local conditions at South Bend are, but on general principles, I doubt the wisdom of a recommendation advising a full time health officer at a salary of $2,500 a year for a city of over 60,000 people.

I believe in full time service but I do not believe in encouraging the idea that a competent, administrative officer for a modern health department in the city of South Bend can be secured for $2,500, unless, in addition to being a trained public health administrator, he is a professional philanthropist.

It seems to me it is high time to establish some reasonable standard of compensation for health work. The head of a health department of a community should be a man who compares favorably in professional and personal attainments with the best of the profession in that community and he should be entitled, at least, to the emoluments of the average member of the better class of practitioners. Advising full time health officers at salaries inadequate for high class men to live on is not going to advance the public health movement. At any rate that is the way it looks to me—and I think I am right.

With kind regards, I am,

Sincerely yours,

C. G. PARNALL, M. D.

Jackson, Mich.

Personal Notes.

Members and subscribers enlisting in the Sanitary Service, or other war divisions, are respectfully requested to inform the Editor, for notice in these columns.

Dr. J. Bernard Nelson has recently been elected Secretary of the Arizona State Board of Health, succeeding Dr. R. N. Looney.

Dr. George Ruhland, Health Officer of Milwaukee, has been called into the war service.

The following District Health Officers have been appointed in California:

A. F. Gillihan, M. D., Santa Rosa, Cal., formerly lecturer at the Training School for Nurses at Berkeley, Cal., and at Oakland.

Harold Gray, B. S., M. S., Gr. P. H., Chico, Cal., formerly Assistant Health Officer, San Jose, Cal.

Robert N. Hoyt, S. B., San Jose, formerly Health Officer at Manchester, N. H.

Ralph W. Nauss, M. D., Dr. P. H., Fresno, formerly Epidemiologist, California State Board of Health.

E. D. Ward, M. D., Los Angeles, formerly Health Commissioner at Los Angeles.

E. A. Ingham, S. B., C. P. H. (Harvard-Technology), Riverside, Cal., formerly Agent of the Massachusetts Medical Society and lecturer at Massachusetts Institute of Technology and Tufts Medical College, Boston.

Dr. E. L. Godfrey has resigned as Director of the Bureau of Communicable Diseases of the Illinois State Health Department to become Sanitary Supervisor at the New York State Department of Health.

Dr. T. F. Abercrombie, formerly Health Commissioner of Glynn County, Georgia, has been elected to the position of Secretary of the Georgia State Board of Health. Doctor Abercrombie succeeds Dr. H. F. Harris, who has occupied the position of Secretary and Director of Laboratories since the Board was established. The Board elected Dr. Lovick T. Pattillo as Director of Laboratories.

Dr. H. H. Mitchell, Epidemiologist to the Indiana State Board of Health, has been commissioned as First Lieutenant in the Medical Reserve Corps.

The following were elected to membership in the American Public Health Association:

Wilfrid Sadler, Bacteriological Laboratory, MacDonald College, Quebec, Bacteriologist.

Ralph R. Morgan, B. S., Y. M. C. A., Petersburg, Va., Dairyman and Bacteriologist.

John Phillips Street, M. S., New Haven, Conn., Chemist.

Mrs. Sydney Williams, Wellesley, Mass.

Mr. Sanford C. Dinsmore, 223 University Terrace, Reno, Nev., Commissioner of Food and Drugs, State Chemist.

Alfred M. G. Soule, Department of Agriculture, State House, Augusta, Me., Chief, Bureau of Inspection.

Mr. Abel Todd, Lansing, Mich., Chemist.

William Levin, Dr. P. H., Ann Arbor, Mich., Assistant in Hygiene, University of Michigan.

Mr. J. D. Hackett, New York City, Industrial Counselor.

Mr. C. B. Hoover, Columbus, Ohio, Chemist.

Herbert J. Watson, P. D., Newark, Del., State Bacteriologist of Delaware with State Board of Health.

Charles N. Haskell, M. D., Bridgeport, Conn., Physician.

Robert M. Allen, New York City, Head of Food and Drug Control in Kentucky.

Ethan A. Gray, M. D., Chicago, Ill., Physician.

Mr. John Tombs, Albuquerque, N. Mex., Executive Secretary of The New Mexico Public Health Association.

Harry D. Garrett, Minneapolis, Minn., Food Inspector.

*

Dr. J. F. Edwards of the Bureau of Infectious Diseases at Pittsburgh has been called into the War Service.

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Dr. B. W. Richards has been appointed Executive State Health Officer of Rhode Island, succeeding Dr. Gardner T. Swarts.

Books Received.

Women as Munition Workers. *Amy Hewes. Pp. 157. New York: Russell Sage Foundation, 1917. Cloth, 75 cents net.*

Preventive Medicine and Hygiene. *M. J. Rosenau, M. D. Third Edition containing a Special Section on Military Hygiene. Illustrated. New York: D. Appleton & Company, 1917. Pp. xxxix+1374. Price, $6.50.*

Handbook of Health in War and Peace. *A Manual of Personal Preparedness. C.-E. A. Winslow. New York: American Museum of Natural History, 1917. Pp. 51. Paper, 25 cents.*

Hygiene and Public Health. *Louis C. Parkes, M. D., D. P. H. and Henry R. Kenwood, M. B., F. R. S., D. P. H. Sixth Edition, with illustrations. Philadelphia: P. Blakiston's Son & Company, 1917. Pp. xi+787. Cloth, $4.00.*

Current Public Health Literature.

AMERICAN.

American Food Journal.

August.

Alfalfa Flour a Possibility. Elizabeth C. Sprague.
Chemist Added to Mr. Hoover's Staff.
How to Make the Best Fly Poison.
Modern Methods of Water Purification By Chemical Treatment. Harry E. Barnard.
Recent Food Decisions of the Department of Agriculture.

The American Journal of Nursing.

XVII. August.

A Central School of Nursing and Public Health. Mary C. Wheeler, R. N., and Mrs. Ira Couch Wood.
Health Activities of a Civic Center in a Small Community. Elizabeth Ross.
A Health Center in a Large City. Robert H. Bishop, M. D.
Principles of Nursing Economy as Applied to Community Health Centers. William C. White, M. D.
Methods of Controlling Venereal Diseases. A. N. Thompson, M. D.
The Relation of the Graduate Nurse to the Problem of Social Hygiene. Mrs. William Falconer.

The Boston Medical and Surgical Journal.

CLXXVII. July 19.

A Comparison of Several Methods of Specific Early Treatment of Acute Anterior Poliomyelitis. Helmuth Ulrich, M. D.
Preparation of Animal Food Proteins for Anaphylactic Tests. R. P. Wodehouse and J. M. D. Olmsted.
A New Theory of Dreams.

CLXXVII. July 26.

Some Medical Practice among the New England Indians and Early Settlers. Carolus Cobb, M. D.
The Camp Idea in Tuberculosis.
The Economic Values of Life and Health.

CLXXVII. August 2.

When is the Diagnosis of Tuberculosis without Positive Sputum Justified? David R. Lyman, M. D.
Diagnosis of Tuberculosis in Children. Henry D. Chadwick, M. D. and Roy Morgan, M. D.
What Should Constitute Reportable Tuberculosis. Francis George Curtis, M. D.
Definitions and Diagnostic Standards in the Diagnosis of Pulmonary Tuberculosis in Adults. John B. Hawes, 2d, M. D.
Occupational Diseases in Massachusetts. Thomas F. Harrington, M. D.
The Diagnosis of Tuberculosis in Recruits.
Report of Committee on Social Insurance.

CLXXVII. August 9.

An Epidemic of Dysentery at the Boston State Hospital. Mary Elizabeth Morse, M. D. and Geneva Tryon, M. D.
A Year's Work with the Wassermann Test. Francis H. Slack, M. D. Philip Castleman, M. D. and Karl R. Bailey, M. D.

The Journal of the American Medical Association.

LXIX. July 21.

Results of the Recent Epidemic of Poliomyelitis in New York State. Henry L. K. Shaw, M. D.

July 28.

The Influence of War on Medical Science. James Ewing, M. D.
The Spread of Infection as a War Measure.
War Wastage: A Note of Warning to Examiners of Recruits. Sir William Osler.

August 4.

The Possible Application of the Macroscopic Slide Agglutination in the Search for Meningococcus Carriers. Charles Krumweide, Jr., M. D.
Standardization of Serums and Vaccines: Some Difficulties and Misunderstandings. G. W. McCoy.

August 11.

Problems Connected with the Collection and Production of Human Milk. B. Raymond Hoobler, M. D.

August 18.

Report of Studies Concerning Acute Lobar Pneumonia. Rufus Cole, M. D.
Occurrence of Tubercle Bacilli in Breast Milk of Tuberculous Women. Stanley L. Wang, M. D., and Frederick Coonley, M. D.

August 25.

The Importance of Diet as a Factor in the Production of Pathologic Changes. William Salant, M. D.
State Organization for Mental Hygiene. Owen Copp, M. D.
Mode of Infection, Means of Prevention and Specific Treatment of Epidemic Meningitis. Simon Flexner, M. D.

Medical Review of Reviews.

23. July.

The Pneumonias. Solomon Solis Cohen, M. D.
Birth Control—*Its General and Medical Aspects.* A. L. Goldwater, M. D.
The Bat as an Eradicator of the Mosquito. S. A. Campbell, M. D.
The Physician and the Alcoholic Question. T. D. Crothers, M. D.

23. August.

The Hygiene of Pregnancy. William C. Heussy.

The Military Surgeon.

XL. June.

The Diagnosis of Tuberculosis in The Military Service. Col. Geo. E. Bushnell, M. C., U. S. Army.
The Sanitary Service of the Austro-Hungarian Army in Campaign. Lieut. Col. Jos. H. Ford, M. C., U. S. A. (Military Observer).
An Epidemiological Study of Measles Outbreak at Camp Wilson, Texas, 1916. Lieut. Col. E. L. Munson, M. C., U. S. Army.
The Mobilization of the Troops of Illinois. Lieut. Col. Jacob Frank, Surgeon General, Ill.
Effects of Submarine Duty on Personnel. Asst. Surgeon Walter W. Cress, U. S. N.
The Administrative Technique of Antityphoid Inoculations. Maj. John H. Allen, M. C., U. S. Army.

The Modern Hospital.

VIII. July.

The Institutional Care of Epileptics. William T. Shanahan.
State Care for the Feeble-Minded. J. M. Murdock, M. D.
Flavoring Extracts, Their Character and Composition. John Phillips Street.
Institutional Economies for War Time.
The Institutional Life of the Moron.
Colonization of Social Misfits in New York State.
New Jersey Colonies for the Feeble-Minded.
The Feeble-Minded in Court.

VIII. August.

The Tuberculosis Campaign in New York State and Elsewhere.
A Survey of Nursing Resources.
A Sex Hygiene Exhibit for Recruits.
Light and Its Effect on Health.

New Orleans Medical and Surgical Journal.

CXX. August.

Placarding for Measles.
Practical Methods of Preventing Diseases in Communities, With Results Accomplished in Shreveport. Dr. G. C. Chandler.
The Laboratory a Contributory Aid in the Care of Pneumonia. Dr. J. C. Cole.
The Importance of Early Diagnosis in Mental Disorders. Dr. R. M. Van Wart.

New York Medical Journal.

CVI. July 28.

The Clinical Significance of Gastrointestinal Toxemias. E. E. Smith, Ph. D., M. D.
Race Betterment Based upon Principles of Physical and Mental Prophylaxis. Alfred Gordon, M. D.
The Field Hospital (*With Six Illustrations*). William W. Reno, A. M., M. D.
The Medical Officer in Action.
Prison Reform and Social Health or Disease.
Drug Resistance in Syphilis.

CVI. August 4.

The Primitive Medicine Man's Virtues. Jonathan Wright, M. D.
The Campaign for Pure Food. Harvey W. Wiley, M. D.
Serum Therapy as Applied. Louis Lehrfeld, M. D.
The Lobar Pneumonia Problem in the Army. Henry J. Nichols, M. D.
Exemption for Medical Students and Doctors.

CVI. August 11.

Diagnosis of Early Cancer of the Stomach. Anthony Bassler, M. D.
Diagnostic Teeth. Percy Willard Roberts, M. D.

CVI. August 18.

A Paraffin Wax Treatment for Burns. Charles A. Behney, A. B., M. D.
Etiology and Treatment of Bronchial Asthma. Mark J. Gottlieb, M. D.

The Nurse.

VI. August.

A Man and His Arteries. William Brady, M. D.
The Care of the Feet. A. W. Herr, M. D.
Warning against Canning Compounds.
Health and Motion Pictures. Ernest A. Dench.

The Public Health Journal.

VIII. July.

Variola. J. B. Boyle.
State-wide Education in Social Hygiene. Wm. T. Foster.
The Rochester Bureau of Health Consultation. George W. Goler.
The Illegitimate Child. J. J. Kelso.
Some Observations on Scarlet Fever. J. C. Hutchison.
Scavenging. Douglas Little.

Safety Engineering.

XXXIII. June.

The Accident Prevention Problem in the Small Shop. Earl B. Morgan.
Injurious Effects of Dust.
Humidity—Heat and Accidents. H. E. Ingram, M. D.
Hygiene, Sanitation and Physical Examinations. William J. Erickson, A. B., M. D.
Community Health and Tuberculosis Conference Demonstration. Lee K. Frankel, Ph. D.

XXXIII. July.

Safety Standards for Industrial Ladders—Tentative Draft of a Code Presented by a Committee of the American Society of Mechanical Engineers. Prepared by William A. Viall.
Carbon Monoxide Poisoning.
Prize Essays on "Safety First."

Social Hygiene.

III. July.

A Study of Venereal Prophylaxis in the Navy. Charles E. Riggs.
What Is Chicago Doing for the Venereally Diseased?

Southern Medical Journal.

X. August.

The Etiology of Poliomyelitis. Horace Greeley.

Texas State Journal of Medicine.

XIII. July.

Collection of Vital Statistics in the Smaller Cities. L. Kaffie.

BRITISH.

Journal of State Medicine.

XXV. July.

On the Choice of Food in War Time. Professor F. G. Hopkins, M. B., D. Sc., F. R. S.
The Protection of the Health of Munition Workers. Edgar L. Collis, M. B.

The Medical Officer.

XVIII. July 7.

Special Article: The Duty of Health Departments on the Alcohol Question. Haven Emerson, M. D.
National Council for Combating Venereal Disease.

XVIII. July 14.

Editorial: National Care of Maternity.
Special Article: Cancer and the Public Health. Francis Carter Wood, M. D.

XVIII. July 28.

Editorial: Anthrax from Shaving Brushes.
Special Article: Meat Inspection in Rural Districts. William G. Savage, M. D., B. Sc., D. P. H.
The Campaign against Venereal Diseases.
Industrial Fatigue.
Bread Economy.
War Bread.

The Medical Officer.

XVII. June 2.

The Health Education of the General Public. W. C. Rucker.

XVII. May 19.

The House-Fly. H. Maxwell-Lefroy.

XVII. June 16.

Public Health and Control of the Liquor Traffic. Editorial.
Tests of Binet and Simon. John Priestley.

XVII. June 23.

L. G. B. Report on Maternity and Child Welfare. Editorial.
The Work of the Meningitis Division of the New York City Health Department. Josephine B. Neal.